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MARCH/APRIL 1989 $3.00

CB Action

AUSTRALIA'S ONLY CB MAGAZINE

HOW TO WORK DX

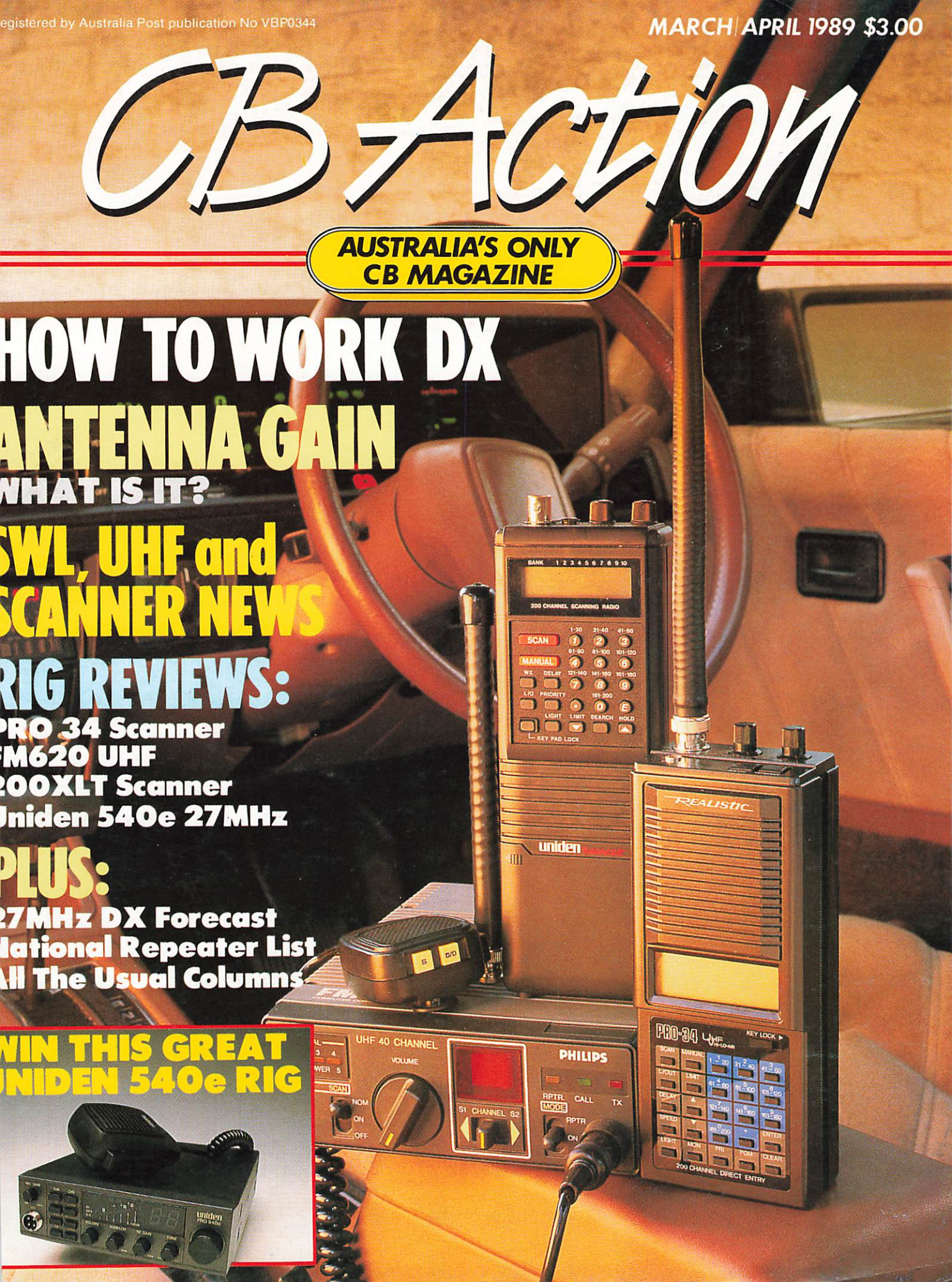
ANTENNA GAIN
WHAT IS IT?

SWL, UHF and SCANNER NEWS

RIG REVIEWS:
PRO 34 Scanner
FM620 UHF
200XLT Scanner
Uniden 540e 27MHz

PLUS:
27MHz DX Forecast
National Repeater List
All The Usual Columns

WIN THIS GREAT UNIDEN 540e RIG



Realistic® Hand Held Scanners

NEW!

Realistic PRO-34. Programmable 200-channel scanner with extended frequency coverage including the 800 MHz band. Frequency coverage: 68-88 MHz, 108-174 MHz, 380-512 MHz, and 806-960 MHz. "Monitor" bank for one-key transfer to permanent memory. Two second scan delay prevents missed replies. Lockout key and keyboard-lock switch. Switchable backlight for night viewing. Requires 6 "AA" batteries or AC or DC adapter.
20-9135 **579.95**

Realistic PRO-33. Extra-rugged and loaded with features! Keyboard lock-key, switchable delay. Lighted clear LCD display with up/down search mode. 20-channel programmable with keyboard access to over frequencies. Frequency coverage: 68-88 MHz, 136-174 MHz, 380-512 MHz. 1/8" jack for earphone, belt clip and flexible antenna. BNC jack for external antenna. Measures 16.5x6.8x4.1cm. Requires 6 "AA" batteries, AC or DC adapter. 20-9134 **379.95**

Realistic PRO-38. Features LCD channel display, review key to display frequencies and keyboard-lock. Direct channel entry. 10-channel programmable. Frequency coverage: 68-88 MHz, 136-144 MHz, 144-148 MHz, 148-174 MHz, 406-450 MHz, 450-470 MHz, 470-512 MHz. 1/8" jack for earphone, belt clip and flexible antenna with BNC jack for adding external antenna. 17.1x6.7x3.5cm. Requires 5 "AA" batteries, AC or DC adapter. 20-9139 **249.95**

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ON CHANNEL

DoTaC AND POLICE NSW BLITZ

The blitz by DoTaC and the NSW police continued throughout the Christmas and New Year period and although the exercise is claimed to be aimed at 'unroadworthy trucks' they invariably pick up plenty of unlicenced CB radios.

We do not have full details on the blitz conducted in late December, but, one during November — which lasted three days — stopped 436 trucks on which 60 defect notices were issued. 260 of the trucks had CB radios fitted and only 140 of these were licenced.

It is understood that the 'bustees' will be proceeded against by DoTaC.

Although it appears to be only trucks which are currently under fire, it can only be a matter of time before these type of blitzes are aimed at non-commercial vehicles so it just might be wise to ensure that your car CB is properly licenced and, ideally, you should carry this licence with you.

IN THIS ISSUE

There is an extremely good line-up of material in this issue including a piece by our DX expert on how to work DX the right way while our propagation chart helps you find the DX in the first place.

Russell Bryant, our scanner expert, reviews the new Tandy PRO 34 hand-held model while Ken Reynolds of Powerband reviews the new Uniden UBC-200XLT scanner and also the new AM 27MHz Pro 540 rig — we also review the FM620 UHF unit from Philips — several years down the track it's still one of the best.

We have a look at why AM is better than SSB and Rob Williams continues his HF Uplink column about short wave radio while Russell Bryant also reviews the latest broadband discone antenna from Belcone.

WORDMAZE

This issue's Wordmaze prize is a great new Uniden 540e AM 27MHz rig courtesy of Santronic.

The Eavesdropper antenna is reviewed (ideal for SWL), Greg Towells provides the update on repeater listings while Rod Fewster, Steve Griffin, Don West and David Flynn all contribute their own columns and/or reports.

There's a great piece about antenna gain from Lou Franklin and a short piece about all the junk now floating around in space.

WHERE'S THE EAGLE ?

As you probably noticed, we ran an old column of Eagle Droppings in our last issue.

We had planned to bring you the latest on Fred's exploits, but, at the last minute Fred vanished overseas yet again so we decided to fill the space with one of his best efforts from times long past.

Fred dudded us again this issue and, while we know from your letters that you want the column on a regular basis, we can't do much about until we tie down the wandering Fred.

We're still working on it...

Meantime, enjoy this issue.

IT'S ALL HERE!

Why drive across town?

Sydney's radio enthusiasts are saving time and money by coming straight to Argent Communications.

We've got 27MHz, for your safety on the road or for chasing DX around the world.

Plus the widest range of UHF rigs — portables, mobiles, antennas and accessories for your business or hobby use.

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Blacktown NSW 2148
PH (02) 671 3333

MOBILE ONE BOOT MOUNTS

POLISHED STAINLESS STEEL OR BLACK

FEATURES

The Mobile One Stainless Steel Boot Mount is an Australian made antenna mounting system, designed as a substitute for front or rear guard mounting and will fit the bonnet or boot of most vehicles.
The unique feature of the Mount is that it can be installed without drilling any holes.

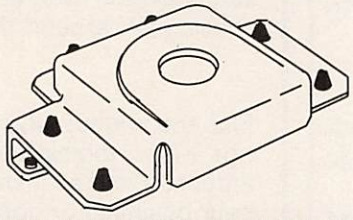
The following Base and Lead Assemblies can be used with the Boot Mount:

A12C	•Light Duty Roof Mount Base, 12 Foot of RG58 Coaxial Cable & PL259
A3.6	•Light Duty Roof Mount Base and 3.6 mtrs RG58c/u (Mil Spec)
UL3.6	•UHF Coax Roof Mount Base and 3.6 mtrs RG58c/u (Mil Spec)
DM12CK	•Encapsulated Dipole Mount, 3.6 mtrs RG58c/u Coax & Mounting Kit.
SOC	•SO239 Coaxial Mount. For Whips with a PL259 Termination.

INSTALLATION

1. INSTALL APPROPRIATE BASE ASSEMBLY ON TO MOUNT.
2. OPEN THE BOOT OR BONNET AND LOCATE DESIRED POSITION.
3. SLIDE THE BOOT MOUNT OVER THE LIP OF THE BOOT OR BONNET.
4. SECURE THE STAINLESS STEEL SCREWS WITH THE ALLEN KEY PROVIDED.
5. RUN COAXIAL CABLE INSIDE TO THE TRANSMITTER AND VSWR ANTENNA.

AVAILABLE IN POLISHED STAINLESS STEEL OR BLACK POWDER COAT.

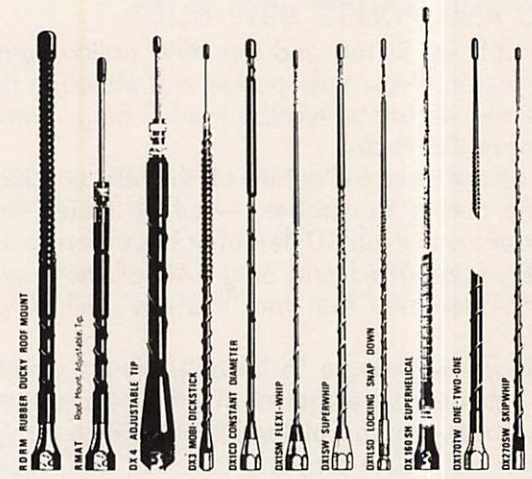


PATENT PENDING No. 77770/87 REG. DESIGN No.99152

MOBILE ONE PRODUCTS ARE COVERED BY TRADEMARK, PATENT, DESIGN AND COPYRIGHT PROTECTION

MOBILE ONE CB ANTENNAS

AUSTRALIAN DESIGNED AND MANUFACTURED 27MHz CITIZENS BAND ANTENNAS



MOBILE ONE COMMUNICATIONS SYSTEMS

MOBILE ONE AUSTRALIA PTY. LTD.

MOBILE ONE PRODUCTS ARE COVERED BY TRADEMARK, PATENT, DESIGN AND COPYRIGHT PROTECTION

MOBILE ONE MAGNETIC MOUNT

MAG12C Mobile Magnetic Mount

The Mag12c Magnetic Mount Assembly has been manufactured in Australia to meet the varying needs of the Mobile User, who requires an easily removable antenna mount for portable applications.

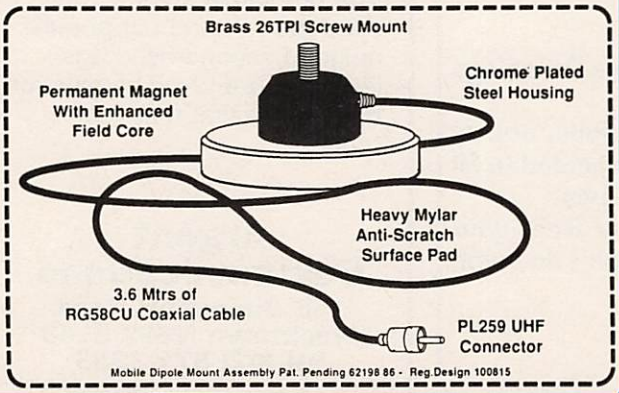
For some time, it has been noted that a need exisedt for a good Magnetic Base Mount that grips the car at up to speeds of 100 kph+ with a 60" (1.5mtr) whip.

Most Australian standard 5/16" X 26 TPI female screw thread whips (to a maximum of 200 grams) can be used with the MAG12C.

All terminations are encapsulated in the Glass Impregnated Nylon moulding of the 'Mobile Dipole Mount' base assembly, (Patent Pending), giving maximum mechanical strength and total weather protection for all electrical connections.

Another feature of this unique mount is the anti-scratch protection pad, made from mylar fibres. It is tough and long lasting, yet will not scratch or damage the paintwork of your vehicle.

THE MAG 12C MAGNETIC ANTENNA MOUNT


Brass 26TPI Screw Mount
Permanent Magnet With Enhanced Field Core
Chrome Plated Steel Housing
Heavy Mylar Anti-Scratch Surface Pad
3.6 Mtrs of RG58CU Coaxial Cable
PL259 UHF Connector

Mobile Dipole Mount Assembly Pat. Pending 62198 86 - Reg.Design 100815

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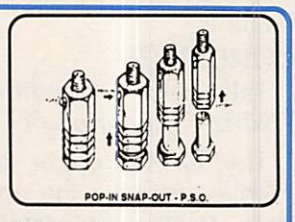
MOBILE ONE ADAPTOR ACCESSORIES

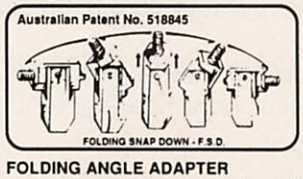
ALL ADAPTERS ARE DESIGNED TO MATE WITH 5/16"-26TPI AUSTRALIAN STANDARD

POP-IN SNAP-OUT

The Pop-in Snap Out quick release system has been developed for the fast and easy removal of mobile whips from their base mounts. Once the **P.S.O.** has been attached to the base and antenna, there is no need to engage in any more tedious unscrewing to remove it. Just Pop in the button aand the antenna will "Snap" from its uniquely designed locking apparatus.



POP-IN SNAP-OUT - P.S.O.



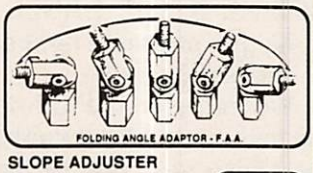
FOLDING SNAP DOWN - F.S.D.

FOLDING SNAP-DOWN

TheFolding Snap-Down adapter has been designed to allow the antenna to remain vertical at high speeds, yet when confronted with overhead obstructions, the **F.S.D.** allows the antenna to be folded down horizontally for maximum clearance.

FOLDING ANGLE ADAPTER

The Folding Angle Adaptor's ability to fold 180° means that while mobile bases can be mounted at any angle, the antenna assumes the required angle for optimum performance. The **F.A.A.** enhances the performance as well as the appearance of th antenna. Suitable for heavy whips.



FOLDING ANGLE ADAPTOR - F.A.A.

SPRING ASSY SMALL

SPRING ASSEMBLY SMALL

The Spring Assembly reduces the incidence of impact shock to the vehicle panelling directly beneath the base mount by allowing the antenna to deflect from overhead obstructions.

SLOPE ADJUSTER

The Slope Adjuster's ability to swivel enables the antenna to be adjusted vertically for better performance and appearance from a base mount angle of up to30°. Suitable for light whips. Available inChrome *SAC* or in Mat Black *SAB*

SLOPE ADJUSTER CHROME - S.A.C.

MOBILE ONE PRODUCTS ARE COVERED BY TRADEMARK, PATENT, DESIGN AND COPYRIGHT PROTECTION

MOBILE ONE

MOBILE ANTENNA

26.5 ~ 30 MHz — DX340 /DX360

MOBI-DICKSTICK

FEATURES

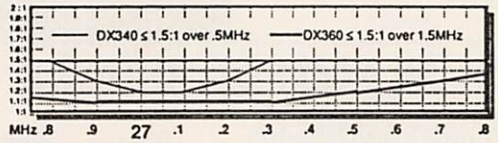
NOW THE VERSATILITY OF AN ADJUSTABLE TIP ANTENNA HAS BEEN COMBINED WITH THE RUGGEDNESS OF A HEAVY-DUTY MOBILE HELICAL.

THE DX3 RANGE HAS BEEN CONSTRUCTED FOR EXTRA BROADBAND COVERAGE OF THE WHOLE 11 MTR BAND AND INCORPORATES A READJUSTABLE FEATURE THAT MEANS THIS PRODUCT CAN BE MOVED FROM VEHICLE TO VEHICLE AND RETUNED AS REQUIRED.

THE RADIATOR HAS BEEN COATED WITH A RUGGED POLYOLEFIN HEAT SHRINK TO PROVIDE A STRONG BUT FLEXIBLE WEATHER-RESISTANT PROTECTIVE SHEATH.

A BANDWIDTH OF 1.5 MHz FOR THE 60" MODEL, AND .5 MHz FOR THE 40" MODEL CAN BE OBTAINED FROM THESE PRODUCTS WHEN CENTRE ROOF OR MIRROR MOUNTED ON MOST TYPES OF VEHICLES.

VSWR



SPECIFICATIONS

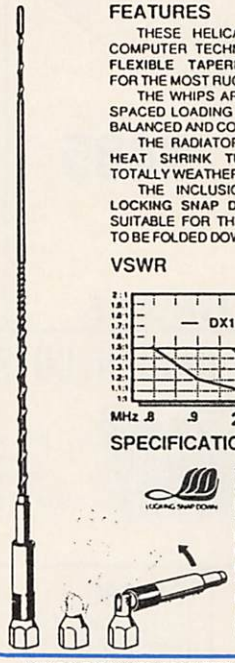
TYPE	HELICALLY WOUND MONO POLE
ORDERCODE	DX340 / DX360
LENGTH	40" (1.05m) / 60" (1.53m)
TUNING	ADJUSTABLE TIP
FREQUENCY	26.5 ~ 30 MHz
IMPEDANCE	50 OHMS
MAX.POWER	40" ~ 50 W / 60" ~100W
TERMINATION	5/16" x 26 TPI - FEMALE
PATTERN	OMNI DIRECTIONAL VERTICAL
APPLICATION	ROOF RACK OR MIRROR MOUNT
VSWR	≤ 1.5:1 OVER .5 MHz ~ 40"
VSWR	≤ 1.5:1 OVER 1.5 MHz ~ 60"

MOBILE ONE PRODUCTS ARE COVERED BY TRADEMARK, PATENT, DESIGN AND COPYRIGHT PROTECTION

MOBILE ONE

MOBILE ANTENNA

26.5 ~ 29 MHz — DX136LSD / 48 / 60



FEATURES

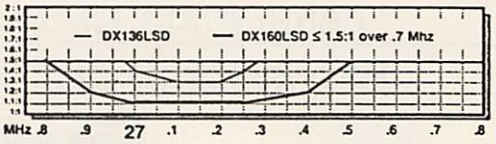
THESE HELICALLY WOUND WHIPS INCORPORATE THE LATEST COMPUTER TECHNOLOGY IN HELIX DESIGN AND ARE WOUND ON A FLEXIBLE TAPERED FIBREGLASS FORMER SPECIALLY DESIGNED FOR THE MOST RUGGED AND DEMANDING ENVIRONMAENT.

THE WHIPS ARE WOUND WITH COPPER WIRE THAT SPIRALS TO A SPACED LOADING COIL SO AS TO MAXIMISE SIGNAL AND PRODUCE A BALANCED AND CONSISTANT RADIATION PATTERN.

THE RADIATOR HAS BEEN COATED WITH A RUGGED POLYOLEFIN HEAT SHRINK TUBING TO PROVIDE A STRONG, FLEXIBLE AND TOTALLY WEATHER-RESISTANT PROTECTIVE SHEATH.

THE INCLUSION OF THE EXCLUSIVE MOBILE ONE DESIGNED LOCKING SNAP DOWN FEATURE MAKES THIS VERSATILE PRODUCT SUITABLE FOR THE MANY APPLICATIONS WERE THE ANTENNA NEEDS TO BE FOLDED DOWN TO CLEAR OVERHEAD OBSTRUCTIONS.

VSWR



SPECIFICATIONS

TYPE	MONO POLE HELICAL WHIP
ORDERCODE	DX136LSD / DX148LSD / DX160LSD
LENGTH	36" (93cm) / 48" (1.22m) / 60" (1.53m)
TUNING	CUT TO TUNE
FREQUENCY	26.5 ~ 29 MHz
IMPEDANCE	50 OHMS
MAX.POWER	50 WATTS
TERMINATION	5/16" x 26 TPI - Female
PATTERN	OMNI DIRECTIONAL VERTICAL
APPLICATION	ROOF,GUTTER OR COWL MOUNT
VSWR	≤ 1.5:1 over .7MHz for 60"

MOBILE ONE PRODUCTS ARE COVERED BY TRADEMARK, PATENT, DESIGN AND COPYRIGHT PROTECTION

MOBILE ONE

MOBILE ANTENNA

26.5 ~ 29 MHz — DX125SH / 40 / 60

SUPERHELICAL

FEATURES

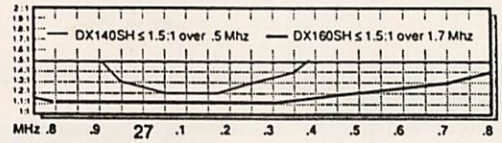
THESE SPECIAL WHIPS INCORPORATE THE LATEST COMPUTER TECHNOLOGY IN CONTINUOUS HELICAL LOADING AND ARE WOUND ON A FLEXIBLE TAPERED FIBREGLASS FORMER SPECIFICALLY DESIGNED TO WITHSTAND THE RUGGED AND HARSH AUSTRALIAN ENVIRONMENT.

MODEL DX125SH AND MODEL DX140SH HAVE BEEN WOUND WITH THE EXCLUSIVE MOBILE ONE SPACED TRIAXIAL SPIROID WINDING THAT PRODUCES A CONTINUOUS FIELD PATTERN SPECIALLY TAILORED FOR THESE LOW PROFILE ANTENNAE.

MODEL DX160SH HAS BEEN WOUND WITH A CONSTANT TURN WINDING WHICH EXIBITS THE SAME RADIATION PATTERN AS A FULL SIZE QUARTER WAVE WHIP, YET IT IS ONLY 60" (1.53m) LONG !

ALL SUPERHELICAL ANTENNAE ARE COATED WITH TOUGH WEARING POLYOLEFIN HEAT SHRINK TUBING FOR TOTAL WEATHER PROTECTION.

VSWR



SPECIFICATIONS

TYPE	MONO POLE HELICAL WHIP
ORDERCODE	DX125SH / DX140SH / DX160SH
LENGTH	25" (.9m) / 40" (1m) / 60" (1.53cm)
TUNING	CUT TO TUNE
FREQUENCY	26.5 ~ 29 MHz
IMPEDANCE	50 OHMS
MAX.POWER	50 WATTS
TERMINATION	5/16" x 26 TPI - Female
PATTERN	OMNI DIRECTIONAL VERTICAL
APPLICATION	ROOF or GUTTER MOUNT
VSWR	≤ 1.5:1 over 1.7MHz for 60"

DX160SH

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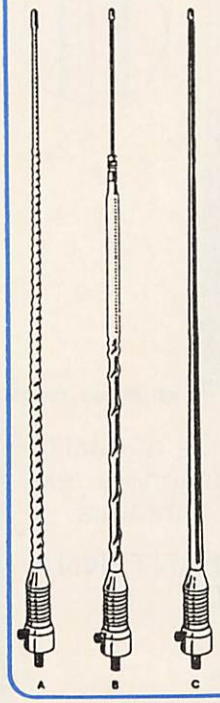
MOBILE ONE

S.A.M.



SPRING ASSEMBLY MOUNT

PATENT PENDING 1985 - PH2268
DESIGN REG. PENDING - 1644-85

This Heavy Duty Base has been designed to fulfil the requirement for a solid yet light duty mounting assembly to support a wide selection of mobile antennae, that are normally subject to continual abuse as would be found in such applications as on trucks and four wheel drive off-road vehicles.

Construction is of high impact polycarbonate and all parts have been suspended in this material by an injection moulding process, subsequently all internal workings are fully protected from the ingress of moisture, dust and dirt.

Termination is provided by a Mil-Spec SO239 Connector protruding from the central core of the assembly.

THe external mounting bolts, as with the mounting hardware have been plated with a special marine grade nickel-cadmium finish.

Mounting is provided by 1/2" whitworth brass bolts and includes a lock washer, star washer and locking nut, so as to prevent the assembly from coming loose due to vibration and shock.

SUPER SPRING ANTENNAS

DX270SS - "SKIPWHIP" - DRAWING A
With Super Spring base assembly, 72" (1.83mtr)
Constant turn 1/4 wave Whip ~ 500 watts
(Ideal for Bumper Bar or Bull Bar Mount)

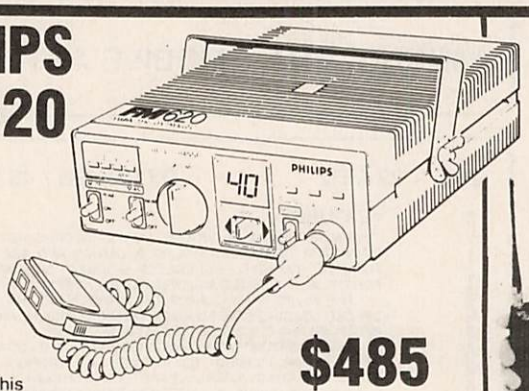
DX580SS - "MONSTER STICK" - DRAWING B
With Super Spring base assembly, 60" (1.53mtr)
Heavy Duty Adjustable Tip ~ 250 watts.
(Ideal for Roof Rack or Bull Bar Mounting)

DX350SS - "MOBI-DICKSTICK"
With Super Spring base assembly, 50" (1.27mtr)
Light Duty Adjustable Tip ~ 100 watts
(Ideal for Roof Rack or Mirror Bracket Mounting)

DX9AS - "SKYSCRAPER" - DRAWING C
With Super Heavy Duty Base Assembly, 100" (2.54mtr)
Computer designed fibreglass encapsulated 1/4 wave radiator for 10 / 11 Mtr bands
(Ideal for Bumper Bar or Bull Bar Mounting)

MOBILE ONE PRODUCTS ARE COVERED BY TRADEMARK, PATENT, DESIGN AND COPYRIGHT PROTECTION

PHILIPS FM-620



$485

Be early for this unrepeatable deal.
Repeaters, scanning repeaters or simplex, priority scan, high intensity display, super interference resistant receiver, compact, lightweight, Australian made.

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FULL RANGE OF QUALITY UHF HANDHELDS

ELECTROPHONE

ICOM IC-40, UNIDEN UH-005

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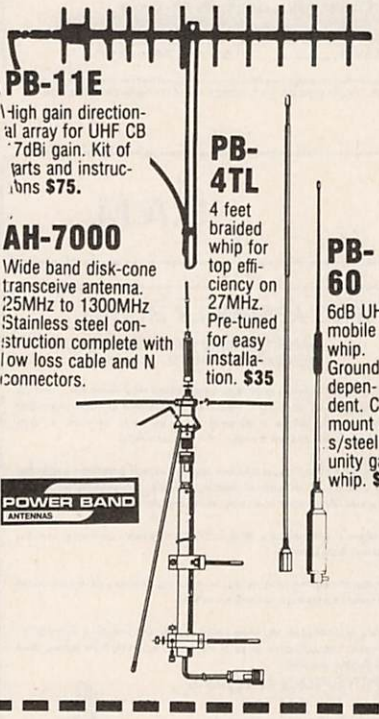

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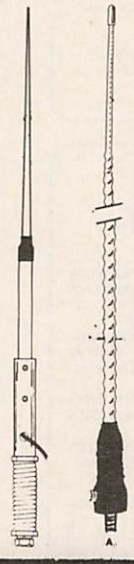

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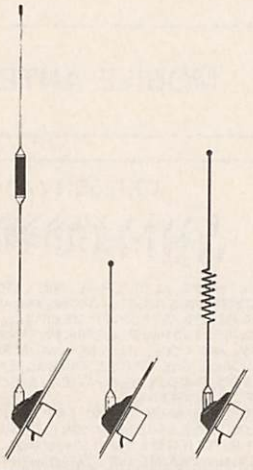

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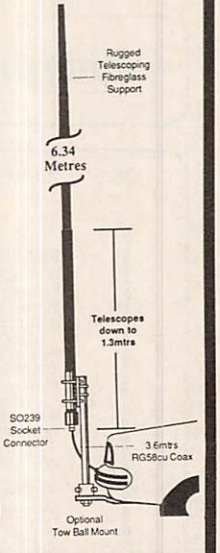

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NEWCOMERS START HERE

Welcome to CB Action magazine — the only regular CB publication in Australia and also the oldest, having been first published in 1977.

CB is a form of radio communication which is popular around the world, however, unlike amateur radio, it is not necesary to pass an examination to go on air.

All that is needed is a licence and the equipment.

CB Action, though, is a little more than just CB. While CB is the backbone of the magazine, it also has reports and reviews on scanners, antennas, shortwave radios and other areas of general interest to radio communicators and listeners.

In the course of reading the magazine (and on air) it is probable that newcomers will encounter words which mean nothing to them.

This short introduction is to help these readers understand CB terminology and its application.

It should be stated right now that **there is no special CB language.**

Many newcomers believe that they require a lecture on the basics of CB language before they can operate on air.

This is simply incorrect.

While some stations use esoteric CB jargon, all Australian CBers understand English and this is all you need to go on air.

A half hour spent listening before going on air for the first time will be time well spent as you will hear how to initiate a contact and how pass the conversation back to the other station and, really, that's about all there is to it.

Even so, while it is not essential that you know and understand some of the various abbreviations used and/or the amateur 'Q' code, it can be helpful to you.

That is what this introduction is all about.

One of the first things you will hear is a **QSO.**

A QSO is simply a contact with another station.

It derives from the amateur radio operator's 'Q' code — a form of abbreviation used by amateurs when sending **CW** (continuous wave transmission) which is simply another way of saying morse code.

Morse code is not used in CB, however, a number of 'Q' code abbreviations are . . .

A **QSL** is a card sent from one station to another confirming that these stations have been in radio contact. It is not sent after every contact, but, is uaully exchanged after a **DX** contact.

DX means long distance, usually overseas but often just interstate. If the station to which you are talking asks whether you QSL the operator is asking whether you will send him a QSL card to confirm the contact.

A **QTH** is the 'Q' code for location so, if you're asked ''what's your QTH?'', the station is asking where your station is located. It's just as easy to ask in plain English, but, it adds a bit of glamour if you say QTH instead.

You'll hear many stations talking about **SWR** (usually pronounces swer — which is incorrect — it is SWR spoken as letters) and this stands for **S**tanding **W**ave **R**atio. This is essentially a measure of the antenna's effectiveness and is read off an **SWR meter.** You will learn what SWR is from this magazine or from a CB store.

When you hear a station calling **CQ CQ** it means that he is looking for a contact with another station. CQ means 'seek you' while **CQDX CQDX** is different (seek you long distance) in that the station only wants a long distance contact — not a local one.

AM stands for amplitude modulation while **SSB** stands for single sideband. If you have an AM only rig it's nice for everyone if you stay on the lower channels and, conversely, if you are using SSB you should restrict your activity to the upper channels.

QSB means that the signal has a tendency to fade — that is, it goes from strong to weak and back to strong again, sometimes over a period of seconds and other times over a period of minutes.

It is not a fault of the station, but, of atmospheric conditions. If a station says there is QSB on your signal it means that your signal is fading and when this occurs it is best to keep your **OVER** short or you are likely to lose the other station while you're talking.

SKIP is essentially the same as DX — if the skip 'is running' it means that there are interstate and/or overseas stations being heard.

BEAM, YAGI and ARRAY all mean much the same. They mean that the station is using an antenna system which effectively (and legally) increases the restricted power output of the CB rig and can be pointed at the other station for improved communication.

A **ROTATOR** is used to turn a beam, Yagi or array. Incidentally, YAGI is spelt with a capital Y as Yagi is the name of the inventor of the beam.

LINEAR, BOOTS, AFTER-BURNER, LITTLE HELPER, etc mean that the station is using illegal equipment to increase the power output and will eventually receive a call from **DoTaC.**

DoTaC is used in this magazine as an abbreviation for the Department of Transport and Communications — the authority charged with the regulations of CB radio.

A **POWER MIKE** is an after-market accessory which can also improve your station's 'talk power'. Whether or not they are legal is open to question, but, they probably aren't.

QRM is when another station is making it difficult to hear due to being too close to your own station, having a rig in poor condition, running illegal power, etc.

QRN, however, is noise made by atmospheric conditions or, more likely, static caused by poorly installed electrical power lines out in the street.

A **SWL** is a **S**hort **W**ave **L**istener but an **XYL** is usually the wife — an ex-young lady. **YL** is of course young lady and a **DOUBLE BUBBLE** is a police vehicle.

GOOD BUDDY is a somewhat derogatory term applied to operators who still use American style CB jargon such as, ''what's your 10-20?'' or ''that's a big 10-4''.

This 10 code originated in America, but, is now rarely used as it indicates that the operator has what can be best termed a 'juvenile brain'.

A **BREAKER** is an operator who wants to get into an existing conversation and there's nothing wrong with **BREAKING** providing that you only call in the pause between overs.

If you break between overs one of the stations will probably say **ACKNOWLEDGE THE BREAKER** which means that you have been heard and will be invited to join in when the stations are ready — in other words standby and don't keep shouting.

An **ALLIGATOR** is another derogatory name which is applied to an operator who talks too much but doesn't listen — in short, all mouth and no ears.

SANDBAGGING means to listen to a conversation but not join in yourself.

A **DUMMY LOAD** is a device which should be used when testing or tuning your rig. It can be purchased from any CB store and should be a must in your list of station equipment.

UHF stands for **U**ltra **H**igh **F**requency and is the 477 MHz CB service.

LONGPATH means that you are pointing away from a station you are speaking with rather than **SHORTPATH** which of course means the opposite.

Different atmospheric conditions mean that at certain times you can communicate with (usually overseas) stations by sending your signal right around the world rather than by the most direct path.

An operator who works out of the legal channel frequencies or runs illegal equipment is referred to as a **PIRATE.**

An **ATU** stands for an **A**ntenna **T**uning **U**nit which is used to tune your antenna to a good match with your rig if the SWR is a little too high.

It won't cure any major SWR problems, but, it can adjust a slightly high SWR reading to a 1:1 match with the transceiver.

If you receive a visit from the **RIs** you're probably in trouble for causing **TVI — T**ele**V**ision **I**nterference — or — **BCI — B**road**C**ast **I**nterference. RIs stand for **R**adio **I**nspector — the gentlemen from DoTaC who call around if there are any complaints about your station.

RIs are also often called **RED INDIANS.**

COAX stands for coaxial cable, the link between your rig and the antenna while a **WHIP** is not something wielded by a leather-clad lady but is rather a generic term for mobile antennae.

A **REPEATER** relays a UHF CB signal from one point to another so giving much greater range of communication and a repeater list is published in every second issue of this magazine.

After all of the above we reiterate — it is not necessary to learn CB jargon to go on air. Sure it helps, but, it will all come in time — for now though just use commonsense English and if you don't understand something don't be afraid to ask — remember everyone you hear also had a first time on air.

We hope you enjoy CB and CB Action.

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GEORGE McCARTHY ASKS THE QUESTION . . .

AM or SIDEBAND . . . ?

Although CB radio has been around for a long time, we still get half a dozen enquiries a day asking what the difference is betwen AM and SSB and why do SSB rigs cost more than AM only ones. George McCarthy explains the difference between AM and single sideband operation and why SSB is so much more effective. He states, "a sideband radio has the capability of communicating at eight times the effectiveness of an AM rig."

This article will try to answer that question as completely as possible — and strip aside some of the mysteries of radio in the process. What most of us are looking for is communication efficiency per dollar, so we want to be well aware of just what we're getting — a tradeoff study with our dollars on the line in trade for a piece of radio equipment that will add to our enjoyment by increasing the effectiveness of our CB radio.

Let's first talk about **communictions effectiveness** in making a comparison between amplitude modulated and single sideband suppressed carrier radios. From this point on we're going to save a little space by referring to them as AM and SSB, rather than by those other terms.

In order to understand the basis of making the comparison, we're going to look behind what those words mean, so that we know exactly how a valid comparison should be made.

The process of modifying a radio signal in some way so as to impose intelligence upon it for the purpose of transmitting messages or entertainment is known as **modulation.** Actually, the turning of a radio carrier off and on by sending a series of dots and dashes is a form of modification to send messages, although, in the strict sense the carrier is not modulated.

However, when we take those audio frequencies that have been picked up by our microphones and amplified by circuits inside our radio, and we superimpose that audio frequency energy on top of the radio frequency energy that has been generated inside of the same radio, the energy that makes up that **carrier** we put out over the air, then we have **modulated** that carrier.

Just how is this done? The modulation process is not very complicated. When we talk about **power** in CB radio, we are talking about the product of voltage and current. It's no different than the power involved in lighting a 60 watt light bulb in our lamp. In this case we run about 240 volts of alternating current from our house wiring into the light bulb. It draws about a quarter an ampere of current, which is used to heat up the filament wire so hot that it becomes incandescent and emits light. The current times the voltage equals the power in watts.

What about power in our CB radio? It's the same ball game. We are going to take DC power out of our car battery, or we're going to use a power supply to take that 240 volts AC from our house wiring and step it down to 13.8 volts and change it to direct current DC. How much power we will use will now depend on how much current we will drain from our power source. If we took 1 amp of current we would multiply it times the 13.8 volts and know that we were running 13.8 watts of power INTO our CB radio.

Why capitalise the word "into"? Because that only tells us what we are putting into the radio, it doesn't tell us what we are getting OUT of the radio. No device in the world that uses power is 100% efficient. There is always some loss between the energy that is supplied and the energy that ultimately performs the work we want. In electrical work, most of this loss is in the form of heat, dissipated in performing some function.

Now, in our example of putting 13.8 watts into our CB radio, we should be aware that this represents the total power used to run the radio. But the output of the radio is determined only by the power that goes into and comes out of the **final stage** of the transmitter. The other power used to run other circuits does not show up in the output.

(continued over)

AM or SIDEBAND

(continued)

The percentage of power that comes out describes the efficiency of a device. Most AM final amplifiers run at about 70-80 percent efficiency. If you want to get 4 watts of carrier output from the final amplifier, you will have to put somewhere between 5 and 6 watts of input power.

So far, we're just talking about carrier power. That describes only the unmodulated radio frequency power that is being transmitted over the air. It is RF energy in the form of an alternating current cycling at 27 million times a second! Actually, the exact number of cycles will determine what channel you are transmitting on. For example, 27,015,000 cycles per second will put you right on channel 1. Of course, for ease of reference we refer to it as megacycles; or we did until a few years back when the use of "cycles" was replaced by the term "hertz" to honor the man who first proved the existence of radio waves, Heinrich Hertz. Now, it's megahertz, abbreviated as MHz, or kilohertz, kHz, if we are talking about thousands instead of millions.

But sheer carrier power isn't going to do us any good unless we modulate it with energy from our voice. For an AM radio this is done by amplifying our voice power until it has reached a level of one half of the input power to the final amplifier of our CB radio. This power level will, of course, only be reached on "voice peaks", since the average audio power will probably be only one third of that.

Now, this audio power is made up of current that is varying in exact accord with our voice power. Since our voice is really a form of alternating current, ranging from a few hundred cycles per second, the result of amplifying the power from the microphone is a current that will aid the power going into the final RF amplifier in one part of the cycle and oppose the power in the other half of the cycle.

You can see that if we are changing the input power to the RF amplifier, in exact proportion to our voice modulation, the output power will be changed accordingly. This process of superimposing the audio power from the amplified voice on to the direct current going to the RF amplifier acts to vary the amount of power going into the amplifier. This modulation then acts to increase carrier power in one direction and to reduce it in the other direction. See Figure 1.

Since we've already said that our audio amplifier must be capable of 50 percent of the input power to modulate the carrier at 100 percent, you may wonder where this extra 50 percent of power goes. It goes right into two **sidebands** that are produced as a result of the modulation process. Just as we produce two additional tones when we hit two keys on the piano at the same time, the tones being the sum of the two original notes in cycles per second, and the difference. For example, if we struck a note that gave off a 1,000 cycle tone at the same time that we struck another note that gave off a 1,200 cycle tone, we would hear not only the two original tones, but two new ones, at 200 cycles per second (the difference) and 2,200 cycles per second (the sum).

If you've not got a grasp of that concept, let's take a look at the modulation process when we lay a signal on our carrier. Suppose our carrier was generating a signal on 10 kHz (10,000 cycles per second) signal. We would produce two new signals, one at 11 kHz and one at 9kHz. If we looked at the result on an oscilloscope we would see a pattern just like that in Figure 1.

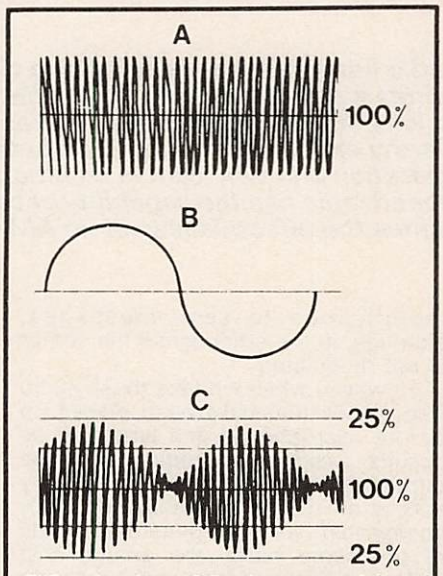

FIG. 1: At "A" the unmodulated carrier shown at 10 kHz. At "B" a pure audio note shown at 1 kHz. At "C" the carrier has been 100% modulated by the audio signal. At the "peak" of the audio cycle, carrier power is increased by 50%, half in each sideband.

There would be an **upper sideband** at 11 kHz, and a **lower sideband** at 9 kHz. Actually, measured from the middle of the carrier, the two sidebands are identical. Keep that point in mind!

Of course, our illustration is very simple. Actually, the human voice is made up of very complex wave forms, all being transmitted at the same time. But, regardless of how complicated the audio wave pattern, all of the frequencies will show up on both sidebands and will be transmitted over the air, along with the carrier. At the receiver the carrier will be removed by the detection or demodulation process and only those two sidebands will remain. They will be converted back into the audio frequency energy that they started off at and come out of your speaker as sound.

Looking again at Figure 1, we can see that on the peaks of the positive cycle the 1 kHz audio tone increased carrier power by 50 percent and on the negative part of the cycle it almost cut carrier power off entirely. Hey, that's great! By our AM modulation we were able to increase our transmitted power by 50 percent. Correct, but we had to create two sidebands in the process. Actually, half of this additional energy was in each sideband.

So we can see that 25 percent of the increase was in the upper sideband and 25 percent in the lower sideband. All that the carrier is good for is as the means of transporting the sidebands, much as a freight train transports goods from one place to another. It is goods (modulation) that we are interested in, the carrier was only a means of getting it there!

Now take a look at Figure 2. It shows you where the power is contained in an AM signal. Two thirds of it is in that carrier (the freight train) and one third is split between those two sidebands (the goods). So one sixth (1/6) of the total power is represented by one sideband.

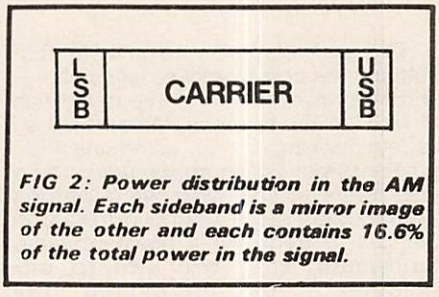

FIG 2: Power distribution in the AM signal. Each sideband is a mirror image of the other and each contains 16.6% of the total power in the signal.

So what, you say, it's doing the job, isn't it? Sure it is, but remember we said that those two sidebands were actually mirror images of each other. Really, only one sideband is needed to transmit that audio from the microphone, so that it can be received and come out the speaker. That means that only 16.6 percent of the total energy is needed to do the job!

Just how does DoTaC measure the output of an AM radio before giving it type acceptance? They run a single note modulation (sine wave) to the 100 percent level and measure the output into a perfect (resistive) load. The result should not exceed 4 watts. How much of that is contained in that single sideband needed to transmit all of the intelligence needed? Why 16.6 percent of course, or a grand total of about TWO THIRDS OF ONE WATT!

Are we telling you that your legal CB AM radio is doing that great job of communicating with less than a single watt of needed power: Yep, we sure are.

Now, let's be entirely fair, however, and admit that your voice doesn't look anything like that pure sine wave that a single tone gives. In fact, it's made up of a group of very complex waveforms in which the **peak power** will be double the **average** power of that sine wave. But don't start jumping up and down for joy over that statement. We're going to follow it with the statement that, unlike a sine wave, the average power of the typical voice is only half that of the sine wave average, which puts it at one fourth of the peak power. And, it is the peak power which determines the point of 100 percent modulation!

You may have to double back and go over the last few sentences a few times to let the full import sink in. In a nutshell, what we've just said is that the peak modulation power of your AM signal contains only 2/3 of a watt in one of the sidebands. And that's at peak. Your voice average is only about 25 percent of that, so your average sideband power is 1/6th of a watt: By now you should look at your AM CB radio in wonderment that it can do such a great job.

Now look at Figure 3. It shows that the entire output of the sideband radio is contained in only one sideband. There is no carrier to take up two thirds of the power. 100 percent of the power is being used to transmit your voice. Compare that to 16.6 percent of the power in one of those AM sidebands. That's a six to one advantage right off the top! You ought to know, however, that back inside of that SSB radio that old process of AM modulation really is going on, all of the principles we've talked about are included. That means the peak power we just mentioned when discussing the AM modulation.

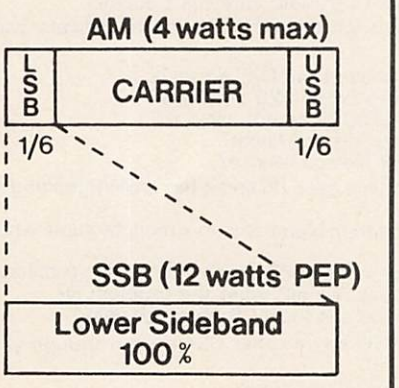

FIG 3: In the AM signal, only one sixth of the power is in the sideband. In the SSB signal 100% of the power, six times as much as in the AM sideband, can be utilised.

But the SSB radio does a few tricks of its own. It takes the audio from the microphone and AM modulates a little carrier it generates just for this purpose. Naturally, two sidebands are generated as a result. But at this point some additional circuitry is inserted (which makes the SSB radio more expensive) which cuts out the carrier and one of the sidebands. That's right. The AM signal is run right through a balanced modulator and zap, there goes that carrier, right out of the picture. Now we're left with just those two sidebands.

So we run them into a filter which is a device that only allows a certain band of frequencies to pass through it. It is only wide enought o let one sideband through. Zap goes the other sideband. By a simple method of changing the position of the sidebands in relation to the filter, we can choose to let either the upper or the lower through.

The rest of the circuity used to transform this sideband into RF energy on the proper channel need not be described in this article, but it does again add to the cost and complexity of the typical SSB radio.

There's a couple of odd results of this process. When there is no sound being picked up and amplified by the microphone circuit there is no signal on the air. Nope, just a big nothing. Not even a little whistle to let someone know a carrier is there — providing that the set has suppressed all of the carrier. The transmitter only puts out energy when the operator is talking, unless the mike gain is so high that a lot of background noise is being transmitted. And, since there is no carrier, it cannot beat or hetrodyne against other carriers slightly different in frequency. Hence, no howling or hetrodyning on a channel occupied by two (or two dozen) SSB radios. What a relief:

How is the power output measured on a SSB radio by DoTaC if there's no power unless being modulated? A new and different concept must be used. It's called PEP and stands for peak envelope power. If you look back at Figure 1 you can see that the lines within the modulated carrier form an envelope that contains the modulated wave-form. It is the peak of such an envelope that will contain the maximum power being transmitted. For SSB radios the peak is allowed to reach 12 watts. Hence the specification 12 watts PEP you have seen.

This method of measuring power gives the SSB radio one more edge over the AM radio. It is generally conceded by communication experts that the SSB mode of transmission has an eight to one (8 to 1) advantage over the AM model..!

There are other advantages which are inherent in the SSB mode, such as freedom from selective fade, ability to use sharp filters to cut down interference, higher average voice power and others. We'll save that for another time and get on to the second question posed at the beginning of this article.

SSB and AM radios are not compatible. A SSB radio can receive an AM signal if it is tuned right to the spot where the carrier is. You see, the SSB radio supplies its own carrier inside the set. Although it doesn't need the AM carrier, it can be zero beaten (tuned right on the nose) to the point where the SSB receiving circuit will ignore it and just process one of the AM sidebands.

But the AM receiver needs a carrier to do its detecting or demodulating job. Without a carrier as a reference point, all that can be heard is a bunch of garbage. Once in a while a SSB signal will ride in on an AM carrier and a few words can be made out, but not too much intelligence can result.

For a CB radio to operate effectively on both AM and SSB it ought to have two different filters, one only 3 or 4 kHz wide to accommodate only the width of a single sideband and one about 10 kHz wide to accommodate the full carrier and both sidebands of an AM signal. In addition, the process of detection is different for the two systems, so the radio ought to have a product detector for SSB and a simple diode detector for AM.

Now, two different filter systems and two different detection systems adds up to more components and more money. Any attempt to utilise some compromise between the two will degrade performance on one or both modes.

The two modes are not only different in electronic principles, but they have apparently generated two different modes of operation. The good buddy, funny handle AM operator seems to go inside of some phone booth and emerge as an entirely different operator who uses his given name as a handle and the Q signals, instead of the 10 codes.

At times I've heard some CBers who were obviously in the somewhat paranoid process of switching back and forth and sometimes forgetting the personality to use to fit the mode.

So what about FM on 11 meters — is this to be the next phase of CB or is it just wishful thinking? We've asked David Flynn to have a look at the situation and we'll carry this report in our next issue.

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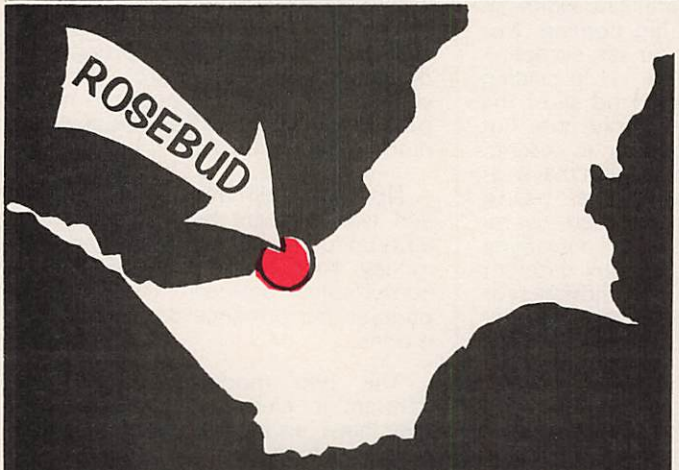

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Q1: Do you have a licence to operate each rig you own?
a) Yes.
b) I have a licence but several rigs.
c) I don't have a licence.
d) I am getting a licence soon.

Q2: Is your rig peaked to more than the legal 12W PEP allowance?
a) Just a little bit.
b) No.
c) Yes, but it blew the finals.
d) No, but I'm trying.

Q3: Do you strictly adhere to legal channels?
a) Always.
b) Most of the time.
c) Not if I can help it.
d) What legal channels?

Q4: Do you run a linear amplifier?
a) Always.
b) Only when working DX.
c) I would but I can't afford one.
d) Never.

Q5: Do you work overseas DX?
a) Yes, whenever I can even though it's illegal.
b) Yes, but only on the legal channels.
c) No, because there's so much noise from blokes calling CQDX that I never hear any.
d) I'd like to but I've only got an AM rig.

Q6: When a fellow CBer asks for a 10-36 do you . . .
a) Tell him the correct time?
b) Tell him to buy a watch?
c) Repeat your last message?
d) Tell him the wrong time on principle?

Q7: You have just made a genuine Stateside DX contact when the old dear from next door tells you that you're causing TVI. Do you . . .
a) Tell her to listen to the radio?
b) Switch off immediately?
c) Turn the linear up another 50 watts?
d) Deny that you are transmitting and the interference is being caused by her electric blanket?

Q8: Do you keep your DX calls short and sharp?
a) Yes, always.
b) Yes, nothing over two minutes.
c) I run a 200 W linear so who cares?
d) I don't call DX.

Q9: If you are accused of splattering a station two miles away, do you . . .
a) Switch off and check to see what is causing the problem?
b) Tell the station to get a new rig?
c) Wind up the mic gain to try and cure the trouble?
d) Start dropping carriers on the other station to indicate your displeasure?

Q10: If you like to work overseas DX, do you . . .
a) Convert your CB rig to cover 120 channels?
b) Ignore it because DoTaC does not allow it?
c) Try to buy an amateur rig and linear?
d) Study for an amateur Novice licence?

Q11: When you turn on your base rig and it has a SWR reading of 5:1, do you . . .
a) Start transmitting and then blame the rig's manufacturer when it blows up?
b) Immediately stop operating and start to look for the problem?
c) Start operating and ask 'on air' what the problem is?
d) Stop operating and call the local CB shop for help?

Q12: Are you always tolerant of other CBers even though you don't agree with them?
a) Yes, because everyone has to learn.
b) No, because I hate Good Buddies.
c) No, because I'm an old time pirate and I know how it was before legislation.
d) Yes, if they know who I am — no, if they don't and I can stir.

Q13: Do you believe that DX comes in every day?
a) No, only when there's a strong wind blowing.

b) Yes, but I can't hear it because of all the noise on the channels.
c) I don't know but I always CQDX for half an hour just in case.
d) No, so I always listen before I open my mouth.

Q14: Your neighbour complains that your voice is coming through his clock radio, do you . . .
a) Apologise and keep on transmitting (your neighbour only weighs 10 stone)?
b) Apologise and stop transmitting (your neighbour weighs 15 stone and is very fit)?
c) Apologise and stop transmitting until you've found out why?
d) Tell him it's his problem and he'd better fix it up or you'll report him?

Q15: There is a stirrer in close proximity to you and you locate him with a DF loop, do you . . .
a) Punch him severely around the head and break his rig?
b) Advise him that you know who he is and suggest that he knocks it off or you'll bust his head?
c) Request that he knock it off or you'll report him to DoTaC?
d) Write a complaint direct to the DoTaC?

Q16: You hear a couple of YLs talking on channel 30, do you . . .
a) Start making obscene suggestions to them?
b) Try to "chat" them up for an eyeball?
c) Put in a breaker at the end of an over and politely ask if you can join the conversation?
d) Switch to another channel because you know both of 'em and they're friends of your mum?

Q17: You have another station close to your own and you both interfere with each other when transmitting, do you . . .
a) Jam his transmission every time you hear him on air?
b) Get together and try to work out your problems?
c) Write a complaint to DoTaC?
d) Buy a 500 acre farm?

Q18: Having paid your licence fee this year, do you . . .
a) Intend to pay it again next year?
b) Didn't pay it this year anyway?
c) Might pay it but don't think so?
d) Will only pay it if something is done to improve the overall situation?

Q19: You are asked by a young local operator to help him with some problems, do you . . .
a) Offer whatever assistance you can?
b) Offer whatever assistance you can if it's a female?
c) Tell the operator to sort out his own bloody problems?
d) Offer to help but then forget all about it?

Q20: If you're fed up with what you're hearing on CB, will you . . .
a) Buy a linear amplifier and become a stirrer?
b) start studying for an amateur licence?
c) Buy an FT101 and pretend that you're an amateur until you're caught?
d) Sell the rig and buy a stereo set?

Questions

1 — a(4) b(3) c(1) d(2)	11 — a(1) b(4) c(2) d(3)
2 — a(3) b(4) c(2) d(1)	12 — a(4) b(2) c(1) d(3)
3 — a(4) b(3) c(2) d(1)	13 — a(1) b(3) c(2) d(4)
4 — a(4) b(3) c(2) d(1)	14 — a(3) b(2) c(4) d(1)
5 — a(2) b(4) c(1) d(3)	15 — a(1) b(3) c(4) d(2)
6 — a(4) b(3) c(2) d(1)	16 — a(1) b(3) c(4) d(2)
7 — a(2) b(4) c(1) d(3)	17 — a(1) b(4) c(2) d(3)
8 — a(4) b(2) c(1) d(3)	18 — a(4) b(10 c(2) d(3)
9 — a(4) b(3) c(2) d(1)	19 — a(4) b(3) c(1) d(2)
10 — a(2) b(4) c(1) d(3)	20 — a(1) b(4) c(3) d(2)

80 points — we think that you're probably a liar.

60-80 We still think that you're probably a bit of a liar, but, then again maybe you're for real — if you are, congratulations.

40-60 An average sort of an operator who probably likes working overseas DX, is relatively tolerant of other operators just so long a they don't call him Good Buddy, and tends to mind his own business — arguably the best type of CBer.

20-40 almost certainly the owner of an AM rig and also probably still at school or else suffering from some type of brain damage.

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REVIEWING THE NEW

BELCONE ANTENNA

Scanning Action's RUSSELL BRYANT reviews the latest broadband scanning antenna to hit the market. The BELCONE is a locally-made discone that may well prove popular. Here are the details . . .

Probably the second most important purchase a scanner enthusiast may consider (the receiver being the first, of course) is an external receiving antenna.

All scanners are sold with an onboard aerial that is adequate for most listening purposes. However some hobbyists find the telescoping whip or rubber duckie, in the case of a handheld, limiting. Many express a desire to expand their monitoring horizons by installing an external antenna.

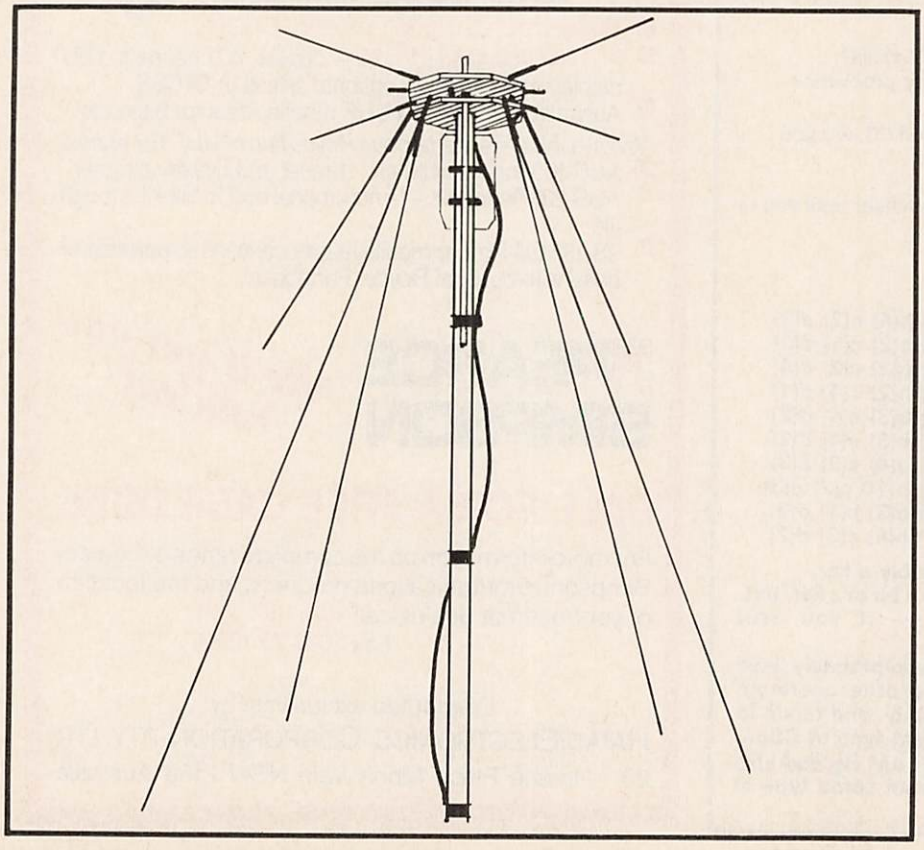
By far the most popular receiving aerial for scanners is the discone. I won't go into great detail, but basically a discone comprises a disc as the receiving element, and a cone as the ground element. Originally the discone was manufactured from solid elements. It was expensive, awkward and heavy. To alleviate the problem, discones are now constructed from aluminium tubes, thus producing a lightweight, yet strong antenna in skeleton form.

A new discone to appear is the locally (Sydney) produced BELCONE AERIAL. Constructed in the aforementioned skeleton form, the manufacturers opted for marine grade tubing in their antenna. Being of such a high grade material the aerial can withstand the environmental elements far better than stock metal.

As a skeleton the performance of the Belcone is not diminished in any way. According to the instruction sheet that accompanies the antenna, the Belcone is capable of receiving and transmitting on any frequency from 50 to 500MHz continuously. I was unable to ascertain the SWR across such a broad band width, however I understand it to be an average 1.5:1 on the two metre and 70cm amateur bands. On UHF CB it would more than likely be close to the same ratio.

Construction and assembly of the Belcone, whilst appearing complicated, is simplicity itself. As supplied the Belcone kit consists of a hub assembly, four long, four medium and four short elements, plus enough self-tapping screws to hold the whole thing together. Belcone has obviously put some thought into its product — it has included the two "U" bolts needed to affix the antenna to the mast. Not many other manufacturers do that.

The Belcone is constructed of two aluminium plates, mounted and insulated one above the other. Attached to the top plate (the receiving element) are eight tubes.



Four of the tubes are cut and sealed, the remaining four are for the retention of the medium elements. The long and short elements are connected to the lower hub and form the groundplane. All the elements are held in place with self-tapping screws. Fully assembled it stands nearly two metres tall and resembles part of a sputnik satellite.

Cable termination on the Belcone is via an SO239 socket, however I am informed by the manufacturers, for an additional charge, they will supply the antenna with a "N" connector. Most scanner enthusiasts are familiar with the PL259/SO239 combination so there shouldn't be a problem with the connectors. The choice of cable you join your scanner to the antenna with, will depend on your budget and circumstance. For short runs (less than 30 metres) RG58CU will suffice, just. A run of RG213 is preferred, to reduce cable loss. Remember, whatever cable you choose, keep it short.

Mounting the Belcone as high as possible will, of course, increase the receiving range of the scanner — the makers recommend a minimum height at just above roof level. The second mounting trick is to insulate the mast so as to eliminate the receiving characteristics of the pole from the aerial.

The test was simple — to connect the Belcone and another commercial discone to a scanner, via a coaxial switch, then change back and forth between the two antennae, comparing the signal. The other discone is mounted over six metres above the ground, the Belcone is mounted at roof level. In 95% of transmissions received it was impossible to tell which antenna was being used.

The receiving capabilities of the Belcone appear to be excellent over the given band width. In addition, the ability to transmit on 54 MHz, 144 MHz, 430 MHz and 477 MHz increase the appeal of the antenna. Most discones on the market today sell anywhere from $150 to $300. The Belcone retails at $99 complete (except for cable of course).

The manufacturers guarantee their product for 90 days after purchase against faulty material and workmanship. It is of the workmanship that I must comment, each Belcone is individually handmade, a rare occurrence in today's prefab, assembly-line world.

Enquiries regarding specifications, performance and suppliers should be directed to Belcone Aerials (047) 393615 or (047) 391144.

For Sydneysiders the Belcone is available from Action Communications, 12A Bringelly Rd, Kingswood, NSW. Telephone (047) 36 4797. Our thanks to Jerry at Action for the loan of the Belcone for review.

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PHILIPS FM620 REVISITED

"The King is dead . . . long live the King!"
This particular cry first strikes you as a pretty daft thing to say. Its origins lie in England, and you'd have to agree that anyone silly enough to wish long life to a corpse deserves to lose their empire.

But of course it doesn't mean that at all.

It's a way of saying out with the old and in with the new, and (in the imperial sense) of perpetuating the throne.

This has got more to do with UHF CB radio than you may have thought. And with one make of UHF CB radio in particular — Philips.

Australia's first true 477MHz rig was Philips' FM320. It is as much a part of the history of UHF CB as any individual, group or event could be.

Philips conceived the idea of a UHF citizens' band in early 1977, back when we were all still playing with 23 channels and the amateurs hadn't stopped whining about the kidnapping of their 11 metre band by us renegades.

They outlined the specifications and the very framework for the allocation. At a later date the company did the same for 477MHz repeaters — and put their money behind the idea by setting up repeaters in all capital cities.

Without Philips we just wouldn't have UHF CB.

They were clever enough to design and build a radio for their 477MHz band, too.

The FM320 hit the stores in March 1978, and stayed with us for an astounding eight years. In that time there were numerous updates of the basic design, small changes which made them unofficially known as a 'Mk I' through to a 'Mk V' or thereabouts. And the FM320 sold hundreds of thousands.

The most popular UHF CB radio in Australia?

No contest!

In March '86, one monarch left the throne and another assumed the crown — the FM620. There was a running joke for months — that Philips should have called it the FM640, because it was twice as good as the 320.

This is no slur against ol' faithful — but the FM620 is that much better, that far more advanced.

Before we get down to the review proper, half of you (the ones with long memories or CBA collections) are wondering why we're about to write up a rig we already covered years ago.

Well guys, it's like this . . . the FM620 was released in the same month as the Sawtron 999 and the Electrophone TX472. So we did a 'three-in-one' comparison, and now — three years on — we thought it was about time the FM620 got a trot on its own. And this isn't a good time of year for new UHF rigs, either — Len Shaw has his pick of 27MHz radios, Russell Bryant is juggling half-a-dozen new scanners, but the UHF scene is taking a breather. Satisfied?

Features Plus . . .

The FM620 is quite a pleasant looker, finished in grey with a charcoal fascia and yellow and white detailing. The cover pic says it all — the layout is clean, and would pose no difficulties for any operator.

Yet the rig boasts band and repeater scanning, priority scanning, two user-nominated channel resets and a tone control.

So for its high level of features, the FM620 makes very efficient use of the controls — everything except the volume knob doubles up on functions.

The FM620 also scores well in the pretty lights department, with the S/RF meter, channel display and mode indicators all LED. Four red LEDs are used for the signal meter, the first coming to life at 0.5 microvolts and the full house at 4.5 microvolts. You also get the lot if you have full power output (5 watts).

Other LEDs indicate repeater mode (yellow), receive (green) and transmit (red). All of these, like the channel readout, are very bright — Philips calls them 'high intensity', and that's not inaccurate.

(continued over)

PHILIPS FM620 REVISITED

(continued)

Unlike many other LEDs these don't wash out in direct sunlight.

Personally I found the down-side of this to be that they were too bright for night driving. My preference would be for an automatic dimmer line, as with the Sawtron radios, which can be hooked into the dash light circuit and dims the display when the driving lights are switched on.

The 620 uses a compact 'fist-mike'. The push-to-talk bar has a solid movement, more so than the delicate motion of the earlier version first seen on the 320. Atop the mike are two push-buttons which drive the optional selective calling.

It's a shame that the selcall buttons have replaced the channel-change function of the FM320 mike. Mind you, one of the more popular hints on the band is a quick and easy mod which converts these buttons to up/down channel controls.

The mike isn't fragile for its size. It sat snugly in my grip, and my hands are far from large. If you had paws the size of Fewster, you'd need a metal detector to find the thing!

The trim dimensions and light weight of the FM620 (due to the use of plastic casing rather than metal) make it a breeze for mobile installations. The rear panel has a socket for driving an external speaker (at up to 3 watts). Power is pumped through a hard-wired heavy gauge cable which is double-fused and should take some punishment.

And the mounting bracket is neat, too, being an improved version of the 320 bracket. It adjusts along the full depth of the rig, fixing at any almost any angle above or below the radio. The bracket itself is quite solid, and would do justice to any situation.

But, why the continued use of the Belling-Lee antenna connector?

Most Philips owners have long-since replaced these with a BNC socket, and either terminate their cabling in BNC or use a 259 adaptor. If I hadn't had this rig on loan, I would have done the same.

"The FM620 is a rig which satisfies."

The FM620 could best be described as a mid-range rig.

It has the quality and performance you'd expect, and combines these with some very useful functions. As mentioned earlier, most controls double-up on the job, but this causes no major drama in operation.

Repeater operation is accessed by the top-most setting of the power on/off switch, labelled 'mode'. In the same way, the 'mute' switch selects squelch on or off (as opposed to the variable knob of other radios), and also the tone — which reduces higher treble content of the audio.

The 'scan' switch is interesting, and works in conjunction with the channel selector and mode switch to drive the 620's very versatile scanning/priority channel arrangement.

In the 'off' position, you've got normal operation through the channel selector toggle. Move it left for a lower channel, right for a higher one; hold it in either direction and you'll skip through the channels at a rate of seven per second.

Throw the scan switch up to the top ('norm'), and the FM620 will automatically shift onto a pre-selected 'nominated' or priority channel. There are two such channels — if you are using the rig in simplex, the channel can be any from 1-40. In repeater mode, it is from 1-8.

Both nominated channels are pre-programmed at the factory (simplex 11 and rpt 1), but are easily set to your own choice by any dealer.

You don't need much imagination to see how handy this is for the enthusiast, commercial or personal user. One switch locks you onto your favourite simplex or net channel, or on the local repeater.

With the scan switch 'on', you're ready to start scanning — and this time, you've a choice of four scanning modes. Each is activated by pressing the channel selector to the left or right, towards the labels 'S1' or 'S2'.

In simplex mode, S2 will shoot you across the entire band, looking for a busy channel. There is an in-built four second delay following any transmission, so you can hear the reply.

S1 is a priority scan, which keeps an ear on your nominated simplex channel as it skips along.

In repeater mode, S2 will direct the FM620 to scan only the repeater channels — 1 to 8. S1 mode brings your nominated repeater channel into action, as a priority channel.

Pretty snazzy, eh?

It's all made easy by the handbook, a good effort with a step-by-step operating guide, installation and antenna hints and warranty details.

Accessories for the FM620 include the SC620 selcall (five-tone), FM620 home-base cabinet and PS901 power supply.

On-Air

I've no complaints on either transmit or receive — the FM620 is a rig which satisfies. Piped through either the internal one watt speaker or an extension, incoming audio had ample clarity and was 'true'. The tone control enhances the mellow end of the signal, and is ideal in a quiet environment such as the home or office.

The FM620 gives as good as it gets, too — transmission is crisp and right on the button for power output and deviation.

In summation, this re-acquaintance with the FM620 is long-overdue. Just because we've grown used to seeing it on the shelf shouldn't make it lose its charm; the opposite in fact, it is an excellent radio, deserving of its success and one which could easily reign for many years to come.

(Review rig supplied by Philips through their Sydney dealership Argent Communications).

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KEN REYNOLDS (POWERBAND) REVIEWS THE NEW

UNIDEN UBC-200XLT SCANNER

The Uniden UBC-200XLT scanning receiver is a small portable unit ideal for monitoring frequencies while stationary or on the move.

It is a compact, attractively styled package with a predominantly 'charcoal' color, clearly marked function keys (labelled in contrasting white lettering) and, although the numeric keypad buttons are small and round, they are easy to operate with medium-sized fingers.

An LCD (Liquid Crystal Display) clearly shows all the necessary operating information including frequency, memory allocation number and bank numbers out of ten selectable banks, channel lock-out, scan delay, priority channel and battery condition indicator.

As the model number indicates, the 200XLT has 200 memory allocations which is the largest offering from Uniden in recent times. The memory numbers are consecutive from one to 200 in ten banks of 20 channels each.

In the scan sequence, all 200 channels may be scanned or any number of channels or banks can be locked-out at the touch of a button.

The frequency ranges covered by this unit are;

66-88MHz
118-136MHz
136-144MHz
144-148MHz
148-174MHz
406-420MHz
420-450MHz
450-470MHz
470-512MHz
806-956MHz

LARGELY WASTED WX BAND

An additional function, but, one largely wasted in Australia is the inclusion of a WX or Weather-Band which scans a selection of internally pre-programmed frequencies in the U.S.A VHF Marine FM Band.

In the U.S.A there are regular broadcasts of weather conditions prevailing in various coastal areas - mainly intended for shipping, but, useful for many other applications.

Like - are you going to get wet at your weekend barbecue ?

These WX frequencies are 162.400MHz, 162.425MHz, 162.450MHz, 162.475MHz, 162.500MHz, 162.525MHz and 162.550MHz.

These channels are in fact outside the Australian maritime allocation and anything you might hear on the WX Band are probably commercial stations.

The display is illuminated for night-time operation by a soft green glow at the touch of a button - the lighting is very good and all display details are easily read. The usual SEARCH function is provided for scanning between two user-programmed frequencies - the step rate in SEARCH mode is 25 channels per second while in the SCAN mode the speed is reduced to 15 channels per second.

A keypad LOCK function is provided to help prevent accidental frequency or mode changes.

CELLULAR RADIO TELEPHONE

The 200XLT is capable of covering the range between 806MHz and 956MHZ which does, of course, include the Cellular Radio Telephone Band.

Because these frequencies are allocated for radio telephone use they are afforded legal protection as to their privacy of use for Telecom Cellular Service subscribers and monitoring these frequencies

AN OPTIMISTIC COMPROMISE

The antenna mount is the now standard BNC-type connector with a helically wound flexible whip.

All these style of antennas are an optimistic compromise and should the user require improved performance on a specific frequency it is a good idea to fit an antenna tuned to that frequency.

A great new feature for Uniden scanners is the interchangeable battery pack, similar in styling to most of the UHF hand-held CB transceivers.

The unit comes complete with Nicad battery pack and a suitable charger, flexible antenna and a quite sturdy leatherette carry-case which offers adequate protection to the rig.

Operating instructions are not overly comprehensive, however, they are sufficient if read carefully and the user should experience little drama in learning to drive the 200XLT.

The unit weighs in at about 570 grams (1.25 lbs.) and its dimensions are 70mm wide by 190mm high and 32mm deep - as we said earlier, it is a compact little radio.

Performance is good on most of the

VHF/UHF coverage, but, it could do with some slightly improved performance on the 800MHz - 900Mhz allocation.

All things considered, the UBC-200XLT is a well-packaged, attractive receiver that unpretentiously goes about its job of scanning a wide range of frequencies.

It is a shame that 27MHz allocation was not provided for given the large world-wide interest in this band.

Overall, a nice scanner at a sensible price of around $550.

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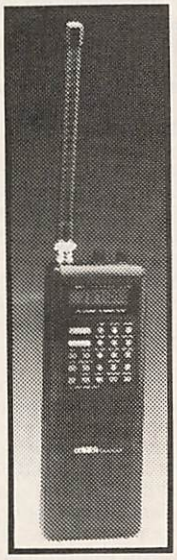

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UBC200XLT
200 Channel
Programmable
Scanner

UBC200XLT Features

- 200 Channel Memory
- 10 Priority Channels
- Scan Delay
- Illuminated Display
- Detachable, Rechargeable Battery Pack
- 12 Band Coverage
- Channel Lockout
- Automatic Search

The UBC200XLT is a complete package and contains everything you need to enjoy scanning. Included are the carrying case with belt loop, antenna, nicad battery pack, AC adapter, and earphone.

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Greg Towells reports on . . .

UHF NEWS and HAPPENINGS

Welcome again to UHF News. Please remember that this is your column, and most of what you read here is the result of feedback from you, the reader.

Address all mail to: PO Box 514, Toukley, NSW 2263.

Please ensure that it arrives within two weeks of this edition appearing, OR it won't make it into print.

Interesting to note that current rash of products and ideas being promoted lately to convert your nice legal UHF rig into a powerhouse of untold spectrum coverage.

It took the US, years to wake up to the expandability of its 27MHz CBs and even longer to do something about it. Wonder how long it will take DoTaC to take action regarding the versatility of its long list of 'type-approved' UHF radios?

With a bit of luck, the more troublesome commercial operators might take the hints and take up residence on a frequency outside the UHF CB band. Here's hoping — any comments?

Had a few letters lately requesting info and advice on the best UHF radio, antennae and accessories. My reply is to check out UHF users, and then, when familiar with UHF operation, to contact reputable CB retailers, many of whom advertise regularly in this mag. This is particularly important in the case of newcomers.

I have noted with some concern lately, that the larger retailers are tending to employ staffers with little more knowledge of the band or the available radios than the newcomer, other than a lot of guesswork with a lot of large words thrown in. Take note of the advice of a number of UHFers before shelling out the brass, newcomers!

And my words of wisdom for some of these retailers is, PLEASE, take some pride in your business and ensure that your salesmen (or women) know what they are talking about. What's the point of investing big bucks when your staff would not have a clue what it is or does? Again any comments from the silent majority?

REPEATER INFO

Now for some repeater info.

A new repeater for the Moranbah district (somewhere near Rockhampton, QLD) has been established by the Moranbah and District UHF Repeater Association. The repeater will prove to be quite an asset to local property workers, who in the past might have had difficulty getting assistance over the UHF radio.

Says Mr Neville Smith, secretary of the Association, "If a man is injured 20Km away at the dam, he needs to be able to get in touch for assistance. If a worker sees a neighbor's cow stuck in a barb wire fence, he can contact someone to help."

The repeater was set up on a range near Coppabella and has a range of up to 100Km from areas such as Nebo to Moranbah and Peak Downs. The unit operates on channel 4/34, and will benefit other organistions such as the State Emergency Service in the area. Thanks for the info David and sorry about the delay.

Channel 1/31 at Tamworth is now officially sponsored by the Tamworth Radio Club. Few other details except the performance of the repeater seems to exceed all expectations. Thanks for the info NCJ982 and, as you can see, everyone will read about it (editor willing).

News from the York and Districts UHF Repeater Group Inc. The group has just become fully incorporated, and the general comment is 'what a long drawn-out process'. York and Districts is the sponsor of 7/37 near Merredin, WA, and recently its repeater has experienced some changes. A 50 metre tower was donated to the group, plus guy wires and coax, for the cost of dismantling it. The generous donor was John Walker, of Walkers Engineering, (apparently he has gone HF-SSB), and the group expresses its thanks and appreciation for the donation. The tower will eventually replace the 25 metre one currently in use.

A comment and a plea from the York and Districts UHF Repeater Group. Many country repeaters are widely used for fire prevention and fighting use during the high-risk fire season (which is now?) and as there is no 5/35 in the area, all emergency traffic comes up on the York repeater. A plea then to Perth repeater-users from the York group is to try to leave 7/37 clear at least after 9.00pm so that the channel can be monitored throughout the night in case of fire.

This would probably be the case in many other country areas throughout Australia, so if your local city repeaters are clear, please use them in preference to the country units — your co-operation in this would be greatly appreciated by many country folk.

Two of the York group's club members use UHF in their aircraft (an exercise I would love to try out — I'm just not game to go for a jolly in my company's FA-18s!). Aerials are mounted underneath the fueselage for ground plane effect, and the range . . . incredible, distances of around 200Km plus!!

For fire spotting and control, this is a real bonus around the Avon Valley. The lucky stations are WAT-991 and WCC-182. Disadvantage . . . they trigger too many repeaters at once and so reap heaps of abuse.

IT'S MY CHANNEL!

One last item from the York Group. Ralph reports that the 'My Channel' attitude is alive and kicking in his district, and suggests possibly that this can be overcome by everyone using proper callsigns — which often silences the whinger (who probably is not licensed anyway).

An interesting story to emerge from this concerned a new UHF user in the district who complained that all 40 channels were 'full-up' in the area, and would DoTaC please make 80 channel sets legal. DoTaC, after a quick check of registered UHF users in the plaintiff's district, suggested that there should still be 35 spare channels!

Therefore, to licensed users, go right ahead and use whatever channel is clear at the time (excepting, of course, for emergency, call and repeater inputs). And thanks to the York and Districts UHF Repeater Group Inc. for all this info.

NEW ONE IN BATHURST

A new repeater has come into service for the Bathurst/Orange area of NSW. To operate on 3/33, with the callsign CAN-03, the unit will be on-air around the mid-year or earlier. It is sponsored by the Central West UHF Repeater Association.

The repeater will consist of an FM-828 (where would UHF repeaters be without these?), with diplexer. The site will be Mt Canobolas, one of NSW's hotspots RF-wise — the site in use for commercial/emergency/government/council/amateur and anything else you could imagine!

Coverage will be excellent, with initial tests giving up to 150Km range in all directions! Coverage will extend to the Great Western Highway between Lithgow to Orange, plus all neighbouring shires of Bathurst and Orange.

The local area already has one repeater (8/38) at Bathurst) with a local coverage of 30-40Km, and there are few UHF hobbyists in the area. However there are a tremendous number of rural users — some say every second farm has UHF. Also, many volunteer emergency services such as the Bush Fire Brigade use UHF. The benefit of the new repeater to these users will be immense.

There are rumours around saying the Dubbo/Wellington area is set to get a UHF repeater, thus assuring the central west of complete coverage of repeaters.

Says Bob Fenton, CWURA President, "it has taken us about a year to get it together. However the people who will use 3/33 the most are the least likely to support it with donations, there are some users with a dozen or more mobiles in the area, and they refuse to give a cent."

Not a nice situation, and he goes on to say that most supportive have been the battlers, like graziers, small business and hobbyists with NO support whatever from the local trade, with the exception of Serv-U Appliances, who are the sponsors of Bathurst 8/38.

The Central West UHF Repeater Association is still seeking financial support from local users, membership costs $20, and donations are also welcome.

Further info can be obtained by writing to CWURA at: PO Box 1062, Bathurst, NSW 2795, or telephone Bob Fenton on (063) 37 5660 AH.

I urge all prospective users to think about the effort and expense the group is going to provide YOU with a service, and make a decent financial contribution to YOUR repeater! Thanks for the info, Bob.

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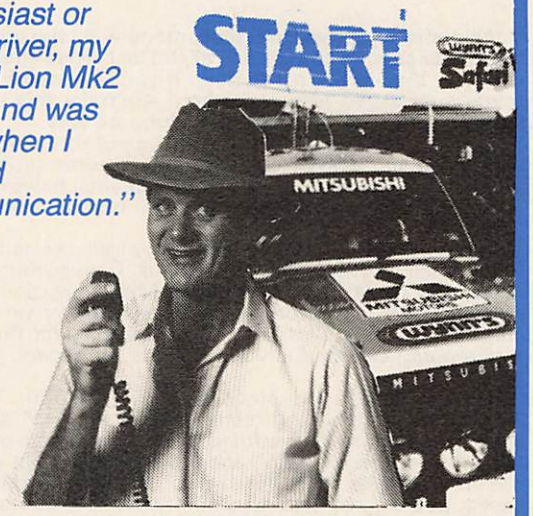

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SCANNING ACTION

As summer draws to a close, many will take advantage of the cooler climate to visit one of the last wildernesses left on earth — the Northern Territory. If you are one of the million tourists expected to see northern Australia this year then I suggest you take your scanner along as well.

Many consider the NT to be the home of HF communications, with wide open spaces, long distances between settlements and a sparse population. True HF reigns supreme, however VHF and something that may surprise you, UHF have a strong following "up north".

The Northern Territory Police employ frequencies from the 64 UHF police channels in all major centres. Darwin, Katherine, Jabiru, Tennant Creek, Alice Springs and Nhulunbuy can be found on 468.450 MHZ. A second channel used in Darwin for licence enquiries, in Tennant Creek for phone patching the Police Station to the patrol cars and in Alice Springs for pagers, is 468.475 MHZ.

There are still a few stations on VHF 72.920, 73.040 and 73.400 but as time and money allows they will gradually be changed over to the higher frequencies. The callsign of the Northern Territory Police is VKM, and the callsigns of the various mobile units is made up of the town or suburb in which the unit is based, plus a three digit number. The number series are:

100...Criminal Investigation Branch
200...Traffic Cars (Highway Patrol)
300...General Duties Sedans
400...GD Vans, Trucks & Paddy Wagons
500...Utilities
600...Four-Wheel Drives
700...Motorcycles

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The Northern Territory Fire Services are administered by the police, so it can be expected that their frequencies are close to the police allocations. The fire brigades that service the cities and towns can be found on 467.750 and 467.800 MHZ. The remaining areas rely on the Bushfire Brigades for protection. Their frequencies are listed later on.

If you are unfortunate enough to be a guest of Her Majesty during your visit to the north and you are permitted to keep a scanner with you in the cells, you may want to listen to the Correctional Services on 467.650, 467.700 and 467.775 MHZ during the stay.

Ambulance services within the Territory are provided by St. John which can be monitored on 463.325 and 463.625 MHZ in Darwin and other larger populated areas.

The Northern Territory Emergency Services are, volunteers who devote many unpaid hours to the good of their community. The NTES are on 80.070, 80.22, 80.31, 80.43 MHZ and 467.225 MHZ.

There are two wildlife services working in the NT — the Northern Territory Conservation Commission and the Australian National Parks and Wildlife Service. The Conservation Commission is charged with the protection of Katherine Gorge, Edith Falls, Alice Springs, Howard and Berry Springs conservation areas. Frequencies used in these areas are 485.275, 485.325 and 485.350 MHZ. For communication over longer distances 75.410 MHZ is available to NTCC vehicles in most areas.

In the Uluru National Park, which surrounds Ayers Rocks, the Conservation Commission together with the Australian National Parks are charged with the protection of the park. The giant tourist facility at Yulara provides the only outpost for hundreds of kilometres.

Because of the remoteness, it is necessary for everyone to coordinate resources, so it is on one channel — 485.350 MHZ on which you can find the Yulara Corporation, Australian National Parks, Territory Conservation Commission, NT Police, Ambulance and medical services and the fire brigade.

The Australian National Parks and Wildlife Service has the task of looking after one of the most rugged areas in the country — Kakadu National Park.

The ANP has 486.100, 486.200, 486.350 and 486.425 available for its communications within Kakadu. Probably one of the best ways to view Kakadu is from the air, Kakadu Air Services operates flights to, from and over the park and can be monitored on 163.510 MHZ.

The South Alligator River is famous for its crocs, a trip up the river on the Kakadu Princess allows you to view these impressive animals from a safe distance. The Kakadu Princess can be heard operating on 157.600 MHZ.

For those who wish to sample wildlife of a different nature, the Diamond Beach Casino in Darwin is on 494.525 MHZ. The Sheraton Alice Springs has 469.700 for in-house services.

If you are a railway enthusiast, it is necessary to travel to Alice Springs to do any monitoring of the Australian National Railways. The ANR uses 162.640 for per way gangs in the Alice, as well as 168.520 for shunting on the mainline. Local shunting is on 168.640 and traffic in the Alice Springs yard can be heard on 168.580 or 168.910 MHZ.

Some of the miscellaneous services and frequencies in the NT are:

72.560 .....Radio SHA Alice Springs
79.250 .....Military Police Darwin
79,420 .....Military Police Darwin
80.55 .....Alice Springs Town Council
158.400 ...Darwin Port Authority
159.730 ...Royal Flying Doctor Alice Springs
160.000 ...Security, Pine Gap Facility
163.240 ...Bushfire Council
168.325 ...Bushfire Council
168.385 ...Bushfire Council
164.485 ...Jabiru Town Authority (Kakadu)
167.620 ...Imparja Television Network

These are just a few of the frequencies above 30 MHZ, that are used throughout the Northern Territory. If you do visit the NT or any other location in Australia take your scanner, then drop me a line here at 'CB Action', as I am sure there are others that would like to know what you heard.

READER INPUT

From a stack of letters from readers across the nation, one of the most comprehensive is from David, of Mt. Morgan in Queensland. David reports the Queensland Police use 468.850 (CH.41) and 468.525 (CH.28) for radar operations in and around the Brisbane area. Foot patrols in Brisbane are on 468.425 (CH.24) and the emergency channels are 468.675 (CH.34) and 468.475 (CH.26)

Another David, this time from Western Australia, provides an insight into the callsigns of the WA Police:

TANGO.....Traffic Patrols, Pursuit Cars etc
SIERRA.....Town Car, General Duties
GOLF.....Town Vans, General Duties
VICTOR MIKE .....Police Boats, Diving Squad
MIKE .....Motor Bikes
YANKEE .....Van with an Aboriginal Aide on board
OSCAR.....Tactical Response Group
ALPHA.....Administration
MIKE LIMA .....Media Liaison
FOXTROT SIERRA Forensic
CHARLIE.....CIB
DELTA.....Detectives, DIV 79

Just to make things interesting the WA Police Department uses a computer system or Computer Aided Dispatch (CAD) to communicate with its units. The operation of CAD is data, so anybody monitoring a transmission hears only tones of varying length and frequency.

Now it is your turn — send in any frequencies, questions or ideas to CBA so that we can share them with other scanner enthusiasts. A few people have written to me requesting a personal reply, if you do please include a stamped self-addressed envelope so I can accommodate you.

INFORMATION

From now until the end of the year Telecom is installing cellular telephones in commercial aircraft. The systems work the same as the land-based network, but require a credit card to be inserted into the machine before a call can be made. The cost is debited to the credit account of the user.

Frequencies for the Aircraft Telephone Service are:
849.000 - 851.000 aircraft to ground
894.000 — 896.000 ground to aircraft.

ANTENNA TIPS

The average scanner is basically three radios in one, a VHF mid-band, a VHF high band and a UHF receiver. For the scanner to receive signals effectively on all frequencies, requires an antenna tuned to the specific band. Unfortunately very few scanners are supplied with antenna sockets that allow the connection of more than one aerial, let alone three.

It is possible, by using a natural occurrence, to have one antenna that is optimumly tuned for the three land mobile services. A harmonically tuned antenna can provide effective performance for many of today's scanners. The average length of a ¼ wave whip on UHF is six inches.

By coincidence the centre of the VHF highband 150 to 174 MHZ is 162 MHZ and a ¼ wave whip at a 162 MHZ measures 18 inches. With simple mathematics it can be calculated that the UHF antenna is a third multiple or harmonic of the VHF high band antenna.

Applying the same principle and taking 80 MHZ as the centre of the VHF mid band, a ¼ wave whip measures approximately 36 inches. Again basic arithmetic tells us that 18 inches is a double harmonic of 36 inches. So by trimming a VHF mid-band whip to 36 inches will provide antenna suitable for most bands.

The use of an aerial tuned by using harmonics, can rival the performance of many of the commercially made broadband discones, for a fraction of the cost. As a cheap effective alternative you can't go wrong.

NEW GEAR

A new scanner set to impress the hardcore enthusiasts is the AOR3000. To call it a scanner is a misnomer, it is really a communications receiver. Frequency range is an impressive 100 KHZ to 2036 MHZ, so you have an HF receiver, FM receiver, air band receiver, scanner, etc. all rolled into one. The AOR3000 can be programmed with AM, FM, SSB modes into any one of its 400 memory channels. Receiving mode, frequency, attenuation are also remembered.

Another new rig from AOR is the AOR900, a handheld 800 MHZ scanner with 100 memory channels. We hope to bring you a review of both units soon.

Law enforcement authorities say it is impossible to estimate the number of scanners in the community, so what are the thousands of scanner owners listing to? How about telling CB Action, by writing to me at:
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SSB ENGINEERING . . VOLUME 2 covers "second generation" PLL rigs, has updated information on many of the older rigs, and includes some build-it-yourself test equipment projects. Price $17.50 including postage.

SSB ENGINEERING . . VOLUME 3 covers the latest PLL ICs, has a ham radio modification section and an AM-to FM CB conversion section. Price $20 including postage.

THE CB PLL DATA BOOK is the CB modifier's Bible. This all-new International Edition covers over fifty specific phase-locked loop ICs, with manufacturers' cross-references. Price $15 including postage.

THE SCREWDRIVER EXPERT'S GUIDE will enable the average non-technical CBer to locate and repair up to 95% of CB radio problems, as well as helping the advanced hobbyist to tune and modify his equipment for improved performances. Price $15 inlcuding postage.

THE CB MODIFICATION HANDBOOK covers Australia's most common CB radios. Everything from a few extra channels to full-house conversions covering hundreds of channels, 5 kHz steps, increasing power, slides etc. Price $15 including postage.

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Rod Fewster with the

QUEENSLAND SCENE

Sad to report the passing of yet another of my old CB mates . . . some months ago, but I only found out recently.

George Wilcox was an active 27 MHz and UHF CBer for many years, and a longtime emergency monitor. Like many other "conservative" Brisbane CBers, George disapproved of the on-air stirring for which I was famous years ago, but he wasn't wimpy about it and despite our differences we were still able to have good conversations both on-air and occasionally face-to-face at 'eyeball' barbecues.

A good CBer whose sensible approach to the hobby will be missed.

★ ★ ★

I had a rather irate call recently from a Sunshine Coast CBer wanting to know why I didn't print the flowery obituary he sent me a while back regarding one of the local CBers who kicked the bucket.

I wasn't going to mention it at all — I filed his letter in the rubbish tin — but now I'll tell the rest of you the same as I told him on the phone.

I had about as much liking for the foul-mouthed idiot as Bruce Ruxton had for the late Emperor Hirohito of Japan.

I had nothing nice to say about him when he was alive, and I'm certainly not going to say anything nice about him now he's dead!!

★ ★ ★

"George", the station with the pathetic 'Chinese' accent who gives a Taipei PO box number for QSLs, is a fake!!

I doubt very much if there is a single pirate station in Taiwan.

The country is in a constant state of war-readiness, and the mere possession of an illegal transceiver can get you shot. Even though most of the world's CBs are made in Taiwan it's impossible to buy one locally, and all manufacture is under bond, for export only. The Taiwanese government is (understandably) paranoid about transceivers, being so close to mainland China, and it's only in the last six months or so that the paranoia has eased enough to allow taxis to have radiocommunications.

So, if you hear "George" calling from Taiwan, don't waste your money sending him a QSL card.

Just ask the clown how the weather is in beautiful downtown Woodford.

★ ★ ★

Talk about Murphy's Law.

Sydney CBer Pat 'Sidney from Sydney' ordered a 12dB UHF base antenna by phone from South Pacific Radio in Brisbane one Monday morning a couple of weeks before Christmas and was promised that the antenna would be despatched the following day. (That day's orders had been collected by the carrier a few minutes earlier.)

Next morning, when SPR unpacked a 15-foot-odd long carton marked "12dB UHF", they found it had been wrongly-labelled and contained a heap of fibreglass 27MHz half-waves. Not much use to a UHF-CBer. Out-of-stock instantly. Murphy could be heard chuckling faintly in the background.

SPR didn't want to let Pat down as he'd arranged for a couple of mates to come over on the weekend to lend a hand with installation, so they did some fast talking and persuaded Antenna Agencies (who were in the middle of a 12dB product run at the time) to drop everything else and complete one at short notice. For reasons known only to Murphy and Santa Claus the usually same-day courier took the antenna home and delivered it on Wednesday morning.

Determined not to be defeated, SPR organised a different courier to collect the antenna for overnight delivery to Sydney.

This should have been the end of the story, but no!!

When Murphy strikes, he strikes with a vengeance!!

On Thursday SPR received another four 12dBs (usually enough to last a few days at least) and sold them all before the end of the day. Out-of-stock again, and Murphy's plot thickened . . .

On Friday morning Pat rang to say his antenna still hadn't arrived. "No need to worry," said SPR. "It should be there today." Just to be on the safe side, Pat rang the courier in Sydney and discovered that the antenna had vanished!!

"Ha! Ha! Ha!", laughed Murphy.

When Pat rang SPR and told them his antenna had disappeared they said, "don't panic. We're out-of-stock again but we'll make a quick trip to Antenna Agencies and take a replacement out to the airport. You'll have it this afternoon."

"Ha! Ha! Ha!", laughed Murphy again, even louder.

Antenna Agencies had no stock. Not only that, they had run out of fibreglass, and couldn't produce another 12dB until the following week.

Poor old Pat was almost distraught. Murphy rolled on the ground howling with glee!!

Meantime, the courier company was searching everywhere for the antenna. I mean, how could anyone misplace a fifteen-foot-long parcel? Late Friday afternoon they rang SPR to say they'd located it. Murphy roared with laughter when they said it had been travelling around all over Australia for days after being inadvertently left aboard the aircraft, strapped to the inside wall where no-one thought to look, and that the aircraft was currently in New Guinea.

Thanks to Murphy it seemed like Pat's mates were going to stuff themselves with beer and prawns and have a relaxing Saturday afternoon, but the courier struck back by freighting the antenna aboard a commercial flight to Sydney and delivering it to Pat's place on Saturday morning.

By the time the steaks and sausages were cooked he was on the air.

So, if you hear 'Sidney from Sydney' on your local repeater, bear in mind that he's talking on the world's best-travelled (but delivered on time) UHF-CB antenna.

Murphy . . . eat your heart out!!

★ ★ ★

27 MHz CB is a major means of everyday local communications on many of the Moreton Bay islands, as well as being used by hundreds of four-wheel-drivers who flock to the islands on weekends and holidays.

A North Stradbroke Island police officer used his police radio to summon urgent medical assistance for a three-year-old boy who was seriously injured while playing on a beach on neighboring Moreton Island during the Christmas holidays, after receiving a mayday transmitted on channel 8 AM by a vehicle on the scene.

Following a spate of bushfires some months ago North Stradbroke Island residents had a whip around to buy a 27 MHz CB and donated it to the local police for installation in their four-wheel-drive.

Seems to me it's paid for itself already.

★ ★ ★

Brisbane's 5/35 emergency repeater was rendered impotent for several hours recently by a budding disk jockey. DoTaC investigators traced the transmission to the Rocklea Markets, and found that channel 35 was being used as a makeshift public-address system by someone who wasn't aware that the channel is the uplink of a repeater.

DoTaC seem to view the incident in a 'no harm was done' light and apparently will not be charging the culprit. This has upset certain people who point out that, in the past, jammers of other Brisbane repeaters have been successfully prosecuted.

Perhaps DoTaC are not pressing charges because the jamming was not a deliberate act of mischief . . . or does the decision not to prosecute indicate that the rumor that DoTaC views the whole UHF-CB 5/35 'emergency repeater' concept as a waste of valuable spectrum space and are considering designating UHF channel 9 as the 'emergency channel' and re-allocating 5/35 for public access is more than just a rumor?

★ ★ ★

Readers will have to wait until the next issue for my response to Robert (don't call me 'Bob') Smith's last-issue open letter to me.

Robert-Not-Bob has provided me with some eye-opening material about the emergency monitoring scene in and around Brisbane, but, things ain't always what they seem, and I want to do a bit of snooping of my own before I stick in my two bob's worth.

CB ACTION SANTRONICS AGENCIES

HERE'S YOUR CHANCE TO WIN A GREAT NEW UNIDEN 540e 27MHz TRANSCEIVER

(see the full review on page 50 of this issue).

Yes, we know that we made an error in our last Wordmaze, but, you were all smart enough to work it out yourselves one way or the other.

The winner of the Leopard Mk 3 UHF rig courtesy of Hatadi Electronics was Mr S.D Gibbons of The Entrance, NSW.

Congratulations Mr Gibbons, firstly for deciphering our mistake and secondly for getting the answers correct.

The correct answers were: 1 — Bryant, 2 — Argent, 3 — Fred, 4 — Greg, 5 — Electrophone, 6 — deleted, 7 — Jack, 8 — deleted, 9 — SONY, 10 — Rod.

The prize for this issue is the new Uniden 540e and it received an excellent review from Ken Reynolds of Powerband (the review is on page 50).

1. Rob (surname?) supplies the HF Uplink column.
2. The new discone antenna reviewed in this issue is made by (name the company).
3. (Name?) Agencies market the Uniden 540e AM 27MHz transceiver.
4. Which company (one word only) makes the $10,000 amateur rig mentioned in the article "Is there life after CB?"
5. Which company (one word only) uses the phrase, "if it could sing it'd sing Waltzing Matilda"?
6. What is the name of the short wave receiving antenna reviewed in this issue?
7. What is the name of the company that imports this antenna (one name only)?
8. What is the surname of the contributor who wrote his last column for this magazine in this issue?
9. What mode — ie. AM, SSB, CW, FM — is being considered as the new (or additional) mode for 27MHz?
10. In what suburb does our UHF contributor have his post office box?

ANSWERS:

1.....
2.....
3.....
4.....
5.....
6.....
7.....
8.....
9.....
10.....

NOTE: The correct answers MUST be circled in the Wordmaze as well as listed above.

The answers can run in any direction — horizontally, vertically, diagonally — ar 1 also back to front.

Find the ten words hidden in the maze, mark them on the Wordmaze and also list them, and post your entry to:

CB Action/Santronic Agencies Wordmaze
GPO Box 628E
Melbourne, Vic. 3001.

The closing date is March 15 and the winner will be selected from all the correct entries received by that date. The draw will be conducted in the offices of CB Action and the results and solution will be published in the next issue.

The judges decision is final and no correspondence will be entered into.

L	O	P	N	D	E	S	G	D	N	T	Z	Z	C	A	E
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Z	A	T	Z	N	C	A	A	A	E	I	L	W	V	Z	M
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Y	V	A	H	D	O	Q	R	R	A	I	L	Q	A	T	O
W	J	H	Q	A	Q	D	A	F	D	A	F	T	E	O	J

WIN THE NEW UNIDEN 540e 27MHz TRANSCEIVER

IF YOU'RE GOING TO DO IT — AT LEAST DO IT PROPERLY

HOW TO WORK DX OR DON'T BE A GOOD BUDDY

Jack, the 67-W-07, has worked well in excess of 100 countries and, as with most things, there's a right way and a 'good buddy' way. Do it the right way and you'll get results — do it the 'good buddy' way and you'll wonder why no-one wants to talk to you.

As we approach Sunspot Cycle 22, long distance contacts are becoming more common and a lot easier and of course with this a lot of new operators are appearing on the band eager to test the performance of their radio by way of long distance communication.

These contacts are more commonly referred to as 'DX', a morse code abbreviation meaning 'long distance'. Whether the contact being made is between states within Australia or somewhere overseas, it is still called DX and for many radio operators it presents in itself a great challenge and fuels new ambitions within the radio hobby.

To the newcomer, especially those who have upgraded from an AM mode only radio to a SSB (Single Side Band) radio, the world of DX and DXing presents a whole new perspective which in turn generates much excitement and adds a new depth to the hobby.

In the DX world the newcomer will be subject to new jargon or terminology such as the words: longpath, direct, ATU, contest, QSB, and numerous other 'Q' codes. This in turn often brings confusion to the newcomer as he hears these strange words on SSB not previously heard on the AM mode.

Actually the 'Q' codes, some of which are also common on the AM sector of the radio, are not meant to be used in voice operation of a radio. The 'Q' code was originally created for operators who use CW (Morse Code) as a means of abbreviating messages of a common nature to save time. Imagine sending this for example on the hand key: "I am receiving interference from another station" — it is much easier to send the letters QRM which, in CW abbreviations, means exactly the same thing!

Ironically, over the years the 'Q' code has crept into the voice operation modes and has now become common terminology during a contact between stations. You will find the 'Q' code used in voice operation not only on the CB and Amateur bands but also on Utility frequencies in the shortwave bands, a sort of lazy man's way of getting the messsage across, wouldn't you agree?

DXing, as with most things in day to day life, has a basic set of rules, or courtesies, you call them what you will. These rules make things easier not only for you but for other operators who take pleasure and satisfaction from the hobby of DXing.

Most of the so called rules are closely related to normal commonsense and you will find that, if adhered to, you will make more friends than enemies on the radio and gain respect from your fellow operators. One can always pick the stations that do not follow the basic courtesies, they are the ones that are ignored by others in their district and also fail to secure DX contacts.

SIMPLE RULES TO FOLLOW

Basically, the rules are simple, follow them and you cannot go wrong;

(1) Thou should not tune up or whistle into the microphone whilst on the call frequency. If you have to test the radio go to a vacant channel and do it there or, better still, use a dummy load. If absolutely necessary, politely ask for a station to station radio check on the call frequency.

(2) Thou should definitely not hold a conversation or partake in idle chit-chat on the call frequency as this not only prevents others from hearing or placing calls but also draws attention to yourself as an incompetent and inconsiderate operator.

(3) Thou should not place a call immediately after another local station has just concluded his. Not only is this rude and inconsiderate but will earn you the nickname of 'Alligator' — all mouth and no ears. Show some courtesy and allow the other operator a few moments to respond to any possible calls directed to his station.

(4) Thou should always keep all "CQDX" calls brief and to the point, long and dragged out calls annoy others and will also cost you contacts on busy frequencies. Spend more time listening than calling and you will get a better idea as to what is going on.

(5) Thou, when directing a call to another station, should avoid repeating his callsign over and over as he knows his callsign and is only interested in hearing who is calling him, again, keep it short and of course to the point.

(6) Thou should have a vacant channel at the ready to adjourn to after establishing a contact on the call frequency — making sure from time to time that in fact it is still free.

(7) Thou should never break into another person's established contact until at least the other stations have the basic formalities exchanged ie: name, callsign, location and signal reports, etc. Better still, it is good manners to wait until they near the end of their contact before breaking in.

(8) Thou must at all times respond truthfully when a signal report is issued. If he is 3 x 2, then report that and not some trumped up report, after all he may be testing new equipment or testing the propagation path and require an accurate report.

(9) Thou should never demand a QSL card from a DX station, but, enquire politely if there is any possibility of exchanging cards. If you do not QSL then say so and under no circumstances feed people with false hope by receiving their card when you have no intention at all in sending yours. Remember, cards and postage cost money and time — if you are not going to reciprocate do not waste their time and money.

(10) Thou must always maintain one's station in good working order and in sound technical condition. Make sure that you do not cause splatter and spurious emissions on the band, also, an efficient operator maintains an accurate station log, recording basic information and all QSL movements.

By following the DXer's basic TEN COMMANDMENTS you should be in a position to establish credibility to yourself as a good DXer and a person who takes pride in the hobby of DX and, in turn, gain respect from others on the band.

A very important tip for the DXer is the use of the phonetic alphabet.

Many people think they are smart and invest their very own phonetic alphabet and while this may be okay when dealing with stations fluent in the English language, it can prove something of a nightmare if working a station who speaks limited English.

It could cost you the contact and a wanted country so stick to the internationally recognised phonetic alphabet.

Not only is the phonetic alphabet subject to abuse by some people who think they are above everyone else, but, numerals also take a hammering from time to time. On various occa-

(continued over)

AOR

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Tuning rates are user selectable from ultra-fine 50 Hz steps for SSB and CW, right up to 100 kHz steps for the UHF communications and TV bands. A slight pull on the spring-loaded tuning knob will increase the tuning speed by a factor of 10, for really fast tuning.

No less than 400 memory channels are provided, arranged in four banks of 100, and each channel will hold frequency, mode and RF attenuator setting. The first channel of each bank can be used as a priority channel, thus giving four priority channels in all.

No less than four search bands are available, and each search band can be programmed by the user to operate anywhere in the tuning range of the receiver. As an aid to searching, up to 48 individual frequencies can be locked out to prevent the receiver stopping on continuously-occupied frequencies.

The performance of the AR3000 is guaranteed by the use of 15 band pass filters before the GaAsFET RF amplifiers, unlike previous generation receivers which use broad-band untuned-input circuits. The AR3000 thus has high sensitivity across its entire tuning range, and equally outstanding dynamic range and freedom from intermodulation effects.

An RS232 port is provided which allows full remote control by computer of the following facilities:
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Memory Bank Changeover.

The comprehensive front panel gives readout of all important parameters including signal strength on a high-contrast liquid crystal display, which is illuminated for use in low-level lighting. The display includes a real time clock for accurate log keeping, and there is also a timer for unattended monitoring.

The AR3000 is powered from any 13.8 Vdc supply, and a suitable mains power supply is provided with the receiver.

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HOW TO WORK DX
(continued)

sions I have heard DXers give their PO Box number or city code as dollars and cents, for example, the post code for Karana Downs in Queensland is 4306 — instead of saying slowly and clearly the numbers FOUR, THREE, ZERO, SIX, I have heard some people say forty-three dollars and zero six cents.

Now, for a station who speaks very little English, let alone understands it, this would be very confusing and annoying, especially if the signals are poor and noise levels high on the band.

ARRL Adopted ICAO Phonetic Alphabet
(International Civil Aviation Organization)

A	ALFA
B	BRAVO
C	CHARLIE
D	DELTA
E	ECHO
F	FOXTROT
G	GOLF
H	HOTEL
I	INDIA
J	JULIETT
K	KILO
L	LIMA
M	MIKE
N	NOVEMBER
O	OSCAR
P	PAPA
Q	QUEBEC
R	ROMEO
S	SIERRA
T	TANGO
U	UNIFORM
V	VICTOR
W	WHISKY
X	X-RAY
Y	YANKEE
Z	ZULU

ON GOOD PHONE OPERATING

1. Listen much . . . with care. Avoid distractions in your operating room.
2. Time your calls: monitor your own frequency. Call only when a station is free.
3. Make short calls, with breaks to listen. Speak clearly, at a steady, modest rate. Three short calls are better than one long one.
4. Use push-to-talk technique . . . speak near the mike. Watch the modulation indicator. Keep local background noise at a minimum.
5. Make notes. Avoid missing points for comment. Jot down topics to avoid repeats.
6. Talk in connected thoughts and phrases. Notes will help avoid mixing up subjects.
7. Speak naturally. QSOs need not be cut and dried. Make them interesting. Avoid exhibitionism. Use proper operating form to promote efficiency in communication and add respect and prestige for your station.

Haphazard selection of words often results in confusion. A degree of uniformity in use of phonetic words reflects favorably on your individual operating.

The above is reprinted from the ARRL Callbook and the correct phonetics should be used at all times.

By saying clearly and slowly the individual numbers you stand a better chance of getting the message across.

Another very important factor is the responsibility of giving accurate radio reports to a DX station. It is very important to commence with the READABILITY report first followed by the signal STRENGTH report in that order.

Readability always comes before signal strength — this is an international procedure. There is also an internationally recognised scale of radio reception reporting for two-way communications.

This is definitely not to be confused with the SINPO code of reporting reception used on the shortwave bands by Short Wave Listeners (SWLers).

When giving a DX station a signal report, always be as accurate as possible as the other station is relying on you for this to judge how this equipment is performing — also to make an evaluation of the propagation path and its condition. You may notice on some QSL cards that the letters "RST" appear.

This means READABILITY, STRENGTH and TONE.

READABILITY:

1 Unreadable.
2 Barely readable, but often a word or two understood.
3 Readable, but with some difficulty.
4 Readable, but practically no difficulty at all.
5 Perfectly readable, no trouble at all.

SIGNAL STRENGTH;

1 Extremely faint signal, barely audible.
2 Reasonably weak signal, just audible.
3 Weak signal.
4 Fair signal, not too bad.
5 Reasonably good signal.
6 Good signal.
7 Reasonably strong signal.
8 Strong signal.
9 Extremely strong signal.

NOTE: Signals over 'S' 9 are usually quoted "DB over 9" so if the signal is 20 on your meter you would in turn report it as 20 DB over 9 etc. Written as 20/9 or 20DB/9.

The first two are the ones that we, as DXers, need to be familiar with as TONE is only used in the CW mode (Morse Code) of communication.

A good DX-er is also known by his good manners on the band.

Often when tuning about the band you will come across stations already in a two-way contact.

The first thing to do before attempting to break in is to stop and listen to what is being said. The worst thing you can do is yell "BREAKER, BREAKER" etc, as most experienced DXers will ignore you if that procedure is used.

The "BREAKER, BREAKER" fraternity are often associated with the nuisance type operators, who do not take the time to listen, but, rudely break in and demand to know "Who's on channel?"

A more commonsense approach is to listen before breaking in — by this method you will have a reasonable idea of who is using the frequency and also an idea as to whether the signal is local or DX.

If you wish to contact one of the stations (or perhaps both of them) and you have noticed that they have the formalities out of the way, a brief mention of your callsign and perhaps country (if they are abroad) in between their transmission is sufficient to announce your presence.

If they are interested in speaking with you (providing of course you are audible at their end), you will be called in to establish contact or told to standby.

When one is told to standby that is what one does, standby.

On countless occasions I have heard operators who have been told to standby continually breaking in and interrupting the contact. This is not only rude and inconsiderate, but will also conclude with the result being that you are being ignored and wiped from the contact altogether.

Another person disliked by DXers and good operators alike is the person who breaks into an established conversation and asks, "Who's on channel?" Naturally enough, if he used his brains and takes the time to listen before breaking in he would have a reasonable idea of who is using the channel, would he not?

There is a call channel where a radio check can be obtained without interrupting established contacts (especially on DX when signals maybe poor and contacts marginal).

With this type of enquiry the DX contact may be lost due to a decline in conditions on the band and thus cost the DXer a hard earned country.

As for the relatively "brain dead" who enquire what channel it is that they are transmitting on, well, that speaks for itself.

BASIC Q CODE AS USED IN DXing

Note that a Q code can be either a statement or a question — ie **QRA What is/the name of my station is . . . . .**

QRM Are you/I am being interferred with (splatter, etc).
QRN Are you/I am troubled by static or atmospheric noise.
QRT Transmission finished/signing off.
QRX Please stand by.
QRZ Who is calling me?
QSB Signals are subject to fade.
QSK Station wishing to break into contact.
QSL Acknowledge receipt — confirmation of contact card.
QSO Conversation/contact.
QSP I will/will you relay?
QSX I am standing by.
QSY Change frequency or channel.
QTH My location is . . . . .
QTR What is/the local time is . . . . .

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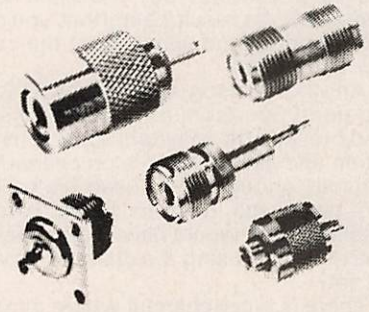

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N-TYPE UHF COAXIAL

04-201	N-type Plug for RG58/U	10.50
04-2011	C390-15 N-type Plug RG58	11.50
04-204	N-type plug for RG213/U	10.89
04-2041	C39-22 N-type Plug RG213	14.03
04-2042	C39-41 Plug	25.00
04-206	N-type Plug for RG10FB	29.70
04-211	N-type socket inline RG58	9.35
04-212	C39-30 N-type Inline RG58	12.65
04-214	N-type socket inline RG213	10.45
04-215	C39-14 N-type socket inline RG214	15.95
04-230	N-type P socket w back nut	6.33
04-233	C30-41 N-Panel socket to RG213	15.13
04-240	N-type double female connector	7.59
04-241	N-type double male connector	7.70
04-243	N-type T Connecto 2F 1M	11.00
04-244	N-type T Connector 3 Female	11.28
04-245	N-type Right Angle Connector	14.30
04-271	N-type Male BNC Female Adaptor	10.89
04-272	N-type Female BNC Male Adaptor	9.35
04-273	N-type Female BNC Adaptor	8.25

BNC UHF COAXIAL

04-301	BNC Plug SCR Type for RG58	5.34
04-302	C53-01 BNC Plug Suit RG58	10.89
04-303	BNC Plug SCR Type for RG59	3.85
04-304	C53-09 BNC to suit RG213U	24.15
04-306	BNC Plug to suit RG10FB	42.35
04-311	BNC Crimp for RG58 UG	9.50
04-321	BNC Double Female	4.40
04-322	BNC Female Short Panel Socket	3.58
04-323	C53-27 BNC Panel Mount 4P	3.85
04-324	BNC Female Panel socket 4P FI	9.50
04-331	BNC Female In-line socket	3.85
04-332	C53-14 Inline Crimp RG58	9.35
04-351	BNC Double Female Adaptor	6.50
04-3511	C53-41 BNC Double Female	9.35
04-352	BNC Double Male Adaptor	4.95
04-353	BNC T Connector 2F 1M	12.93
04-354	BNC T Connector 3F	12.10
04-355	BNC Right Angle Connector	11.00
04-371	BNC Male UHF Female Adaptor	8.25
04-372	BNC Female UHF Male Adaptor	8.25
04-373	BNC Male to TNC F M Adaptor	9.77

2.5mm AUDIO

04-401	2.5mm Plug Plastic Red/Black	0.88
04-403	2.5mm Socket inline Plastic Black	0.55
04-405	2.5mm Socket Panel Mount	0.83
04-406	2.5mm Socket PMT change over	2.20

3.5mm AUDIO

04-412	3.5mm Plug Metal	2.09
04-413	3.5mm Socket Inline Plastic	1.38
04-414	3.5mm Socket Inline Metal Body	1.93
04-415	3.5mm Socket Panel Mount	1.10
04-416	3.5mm Socket PCB Mount	1.65
04-417	3.5mm Change over Socket	1.10
04-418	3.5mm Ster Sckt CH/OV Panel	2.00
04-419	3.5mm Plug to RCA Socket	3.85
04-421	3.5mm Stereo Plug Plastic B&R	2.20
04-422	3.5mm Stereo Plug Metal	2.20
04-423	3.5mm Stereo Socket Inline	1.98
04-424	3.5mm Stereo Socket Metal	4.50
04-425	3.5mm Stereo Socket Panel Mount	2.09
04-426	3.5mm Plug to 6.5mm Jack	2.50
04-427	6.5mm Plug to 3.5mm Jack	2.65

6.5mm AUDIO

04-431	6.5mm Plug Plastic Black Red	2.09
04-432	6.5mm Metal Mono Plug	3.03
04-433	6.5mm Cable Jack plastic Black	1.93
04-434	6.5mm Metal Inline Socket	2.75
04-435	Socket Panel Mount	1.10
04-436	6.5mm Socket Panel w Cutout	2.75
04-441	6.5mm Stereo Plug plastic Black	2.20
04-443	6.5mm Stereo Cable Jack PLS	2.20
04-444	6.5mm Stereo Cable Jack M	3.75
04-445	6.5mm Stereo Socket Panel Mount	3.50
04-446	6.5mm Stereo Panel Socket w CO	5.85
04-447	6.5mm Stereo Jack Mount	6.00

RCA & DIN AUDIO

04-451	RCA Plug Black and Red	1.10
04-453BK	RCA Socket Inline Plastic	2.20
04-461	2 pin DIN Plug PD2	1.65
04-462	2 pin DIN socket SD2	1.65
04-467	DIN Plug 5 Pin Plastic	1.98
04-4671	PD5M 5 Pin DIN Plug Metal	6.33
04-468	DIN Socket 5 Pin Inline	1.65
04-469	DIN 5 Pin Panel Mount socket 45Deg	1.93
04-47006	PD6 6 Pin DIN Plug	1.93
04-471	7 Pin DIN Plug	2.20
04-472	7 Pin DIN Socket	2.20

MICROPHONE LOCK RING/CB TYPE

04-501	2 Pin Mic Plug	5.39
04-502	2 Pin Mic Plug L-type	8.69
04-503	2 Pin Mic Plug Inline socket	8.25
04-504	2 Pin Mic Panel Socket	2.31
04-505	3 Pin Mic Plug	4.29
04-506	3 Pin Mic Plug L-type	8.25
04-507	3 Pin Mic Inline Socket	7.70
04-508	3 Pin Mic Panel Socket	3.03
04-509	4 Pin Mic Plug	5.39
04-510	4 Pin Mic Plug L-type	6.60
04-511	4 Pin In-line Socket	6.60
04-512	4 Pin Mic Panel Socket	3.19
04-513	5 Pin Mic Plug	5.39
04-514	5 Pin Mic Plug L-type	7.59
04-515	5 Pin Mic Inline Socket	9.79
04-516	5 Pin Mic Panel Socket	3.85
04-517	6 Pin Mic Plug	5.39
04-518	6 Pin Mic Plug L-type	7.70
04-519	6 Pin Inline Socket	7.26
04-520	6 Pin Mic Panel Socket	4.35
04-521	7 Pin Mic Plug	7.59
04-522	7 Pin Mic Plug L-type	12.05
04-523	7 Pin Mic Panel Socket	6.05
04-524	7 Pin Mic Inline Socket	8.80
04-525	8 Pin Mic Plug	8.25
04-526	8 Pin Mic Plug L-type	9.90
04-527	8 Pin Inline Socket	9.35
04-528	8 Pin Panel Socket	5.94

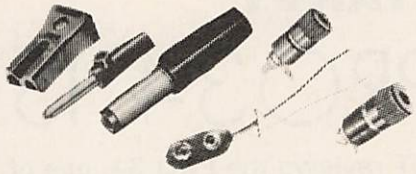
DIN AUDIO

04-540	DIN Mic Plug 5 Pin	4.95
04-541	DIN Mic Plug 5 Pin 180 Deg	7.95
04-543	DIN Mic Socket 5 Pin Panel Mount	3.58

CANNON TYPE DELUXE AUDIO

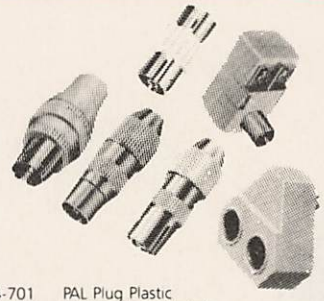
04-561	3 Pin MIC Plug Inline	7.15
04-562	3 Pin Mic Plug Panel Mount	6.60
04-5621	3P C-type P-mount Black	20.90
04-563	3 Pin Mic Socket In-line	9.46
04-564	3 Pin Mic Socket Panel Mount	9.24

DC POWER



04-601	2 Pin Rectangular Power Plug	1.65
04-6010	PC2F Female Con & Housing	1.76
04-602	Banana Plug Screw Type BK	0.94
04-611	Binding Post 4mm Red/Blk	1.65
04-612	Binding Post Large BLK	1.38
04-620	Alligator Clip	1.10
04-628	Auto Cigarette Lighter Plug	2.20
04-629	Auto Cigarette Lighter Plug Fuse	2.15
04-640	DC Power Plug 1mm P411	1.65
04-641	DC Power Plug 1.3mm P413	1.65
04-643	DC Power Plug 2.1mm	1.65
04-644	DC Power Socket Panel 2.1mm	2.09
04-646	DC Power Plug 2.5mm	1.65
04-647	DC Power Socket Mount 2.5mm	1.65
04-648	DC Power Socket 2.5mm Plastic	1.10
04-649	DC Power Plug 3.1mm P431	1.93
04-680	Battery Snap I Type	0.99
04-681	Battery Snap T Type	1.65
04-682	Battery Pack 2 x AA	2.75
04-683	Battery Pack 4 x AA	2.20
04-684	Battery Pack 6 x AA	1.10
04-685	Battery Pack 8 x AA	2.20

TV COAXIAL AND 300 OHMS

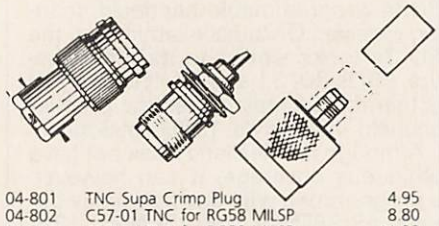


04-701	PAL Plug Plastic	1.10
04-702	TV PAL Plug - Metal	2.48
04-704	TV PAL Inline Socket Metal	2.75
04-705	TV PAL Double Male Connector	2.20
43-706	TV PAL Double Female Connector	1.65
04-707	TV PAL Panel Socket S Face Mt	1.38
04-708	TV PAL Plug W 75 300 ohms TF	2.75
04-709	TV PAL 1M 2F 2 way splitter	4.95

AUTO ANTENNA TYPE

04-741	Auto Antenna Plug – Screw type	3.30
04-743	Auto Antenna Socket – Screw type	3.30
04-744	Auto Antenna Panel Socket	1.65

TNC 800MHz COAXIAL



04-801	TNC Supa Crimp Plug	4.95
04-802	C57-01 TNC for RG58 MILSP	8.80
04-803	C57-14 TNC for RG58 MILSP	11.99
04-804	TNC-26 TNC Plug RG58 CRMP	6.49
04-806	TNC Panel Socket Single Hole	5.50
04-807	TNC Female Inline Socket	12.65
04-808	C47-28 TNC Inline Socket	12.65
04-809	TNC Male/BNC Female Adaptor	10.45
04-810	TNC Male/UHF Female Adaptor	11.55
04-811	TNC Female/BNC Male Adaptor	12.00
04-901	SMA RT/L Crimp Plug RG38	64.90

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A NEW ONE FROM TANDY

REALISTIC PRO34 IS GOOD

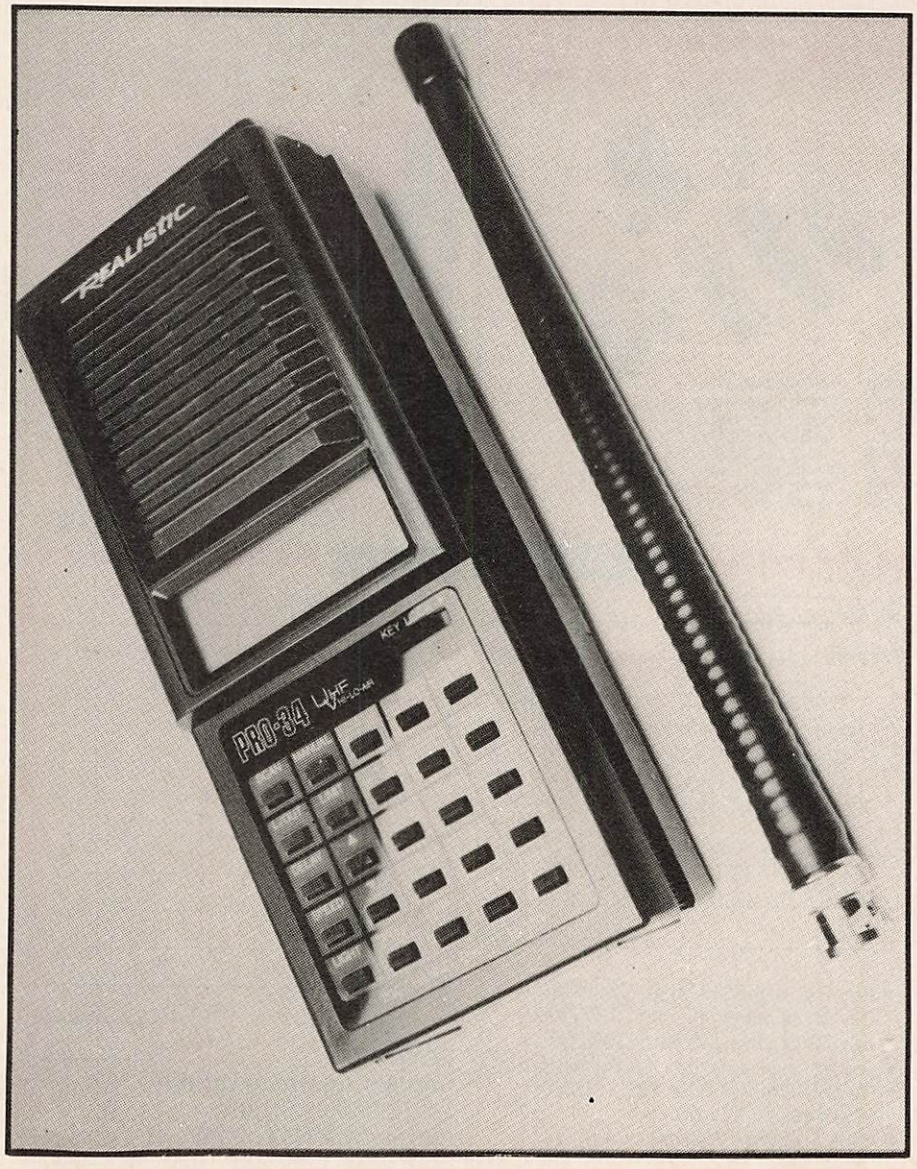
Scanning Action's RUSSELL BRYANT reviews the PRO 34, one of the new generation handheld scanners, covering the 800MHz and cellular bands.

It was only a matter of time before enthusiasts were being tempted with a handheld scanner capable of receiving cellular and 800MHz transmissions.

The temptress is the Realistic PRO34 programmable handheld scanning receiver. On initial examination the PRO 34 looks similar to its predecessors, PROs 30, 31 and 32. It is the PRO 32 that the 34 replaces as the premier handheld in Tandy's 1989 catalogue.

Although the Realistic does not have continuous coverage, it can however, be programmed with any frequency between 68-88MHz, 108-136MHz, 136-174MHz, 380-512MHz and finally 806-960MHz. When a handheld scanner covers the principal Land and Air Mobile services, I sometimes wonder if continuous coverage is necessary, especially if the additional frequencies are not used. After all who wants to "listen" to a television video carrier?

The PRO 34 has a 200-channel memory that can be programmed directly via the keyboard. An additional 10 channels called the MONITOR MEMORY are used to retain active frequencies located during searching. I was flat out trying to program 200 interesting frequencies in the Tandy scanner.



On the cover of the handbook that accompanies the PRO 34 is a sentence: "PLEASE READ BEFORE USING THIS EQUIPMENT". It is important that you do read the manual, as the PRO 34 is basically a microprocessor in a black plastic box and microprocessors do not take kindly to reversed polarity or an over-supply of voltage.

As with all Realistic scanners the OWNERS MANUAL is extremely comprehensive. Initially it takes you on a quick, guided tour of the external controls and features. The preparation prior to programming, a description of the LCD display symbols, the keyboard functions, programming suggestions and trouble-shooting remedies are also covered.

Programming the PRO 34 is identical to the previous PRO series portables. Manual to the channel to be programmed, open the microprocessor using the PGM (program) key. Enter the frequency to be monitored using the numerical keys, press enter and that is it. Repeat the sequence until all the desired channels are programmed. If you make an error, the CLEAR button resets the display for the correct entry.

Not content with one search mode the PRO 34 has two. The first is LIMIT SEARCH. You set the upper and lower limits and press the ⌓ or ⌔ key to start the search. When the radio detects an active frequency you can store it in any of the 10 monitor memories by using the MON (monitor) key. The figures one to 10 are displayed on the top line of the LCD, and a bar beneath the number indicates the monitor memory storing that frequency.

To check stored frequencies in the monitor memory press MANUAL, then MONitor, each depression of the key advances the indicator to the next channel.

The second search function is DIRECT FREQUENCY SEARCH from a programed channel. Select the memory channel, then ⌓ or ⌔ and the radio will search to the highest or lowest extent of that band. Again any active frequencies can be stored in the monitor memory using the same method.

One day you turn the scanner on and the display is showing ancient Japanese symbols and is not receiving on any of the programmed channels. The microprocessor has locked up and all attempts to use the keyboard are unsuccessful. To clear the confusion hold the CLEAR key down and press the RESET button located in the battery compartment. This clears and resets the microprocessor ready for reprogramming.

If you wish to protect the channels stored in the memory, the keyboard can be disabled to prevent accidental channel changes or programming. The KEYLOCK is a positive slide switch that resists de-activation by vibration or knocking. Although the main keys are inactive, the REMOTE buttons, SCAN and MANUAL located atop the scanner, are still able to be used.

A two-second delay is programmable via the keyboard as is channel lockout, priority, and scan speed.

The PRO 34 scans at either four or eight channels per second, taking approximately 25 seconds to cover the 200 channels at its fastest speed. Individual channels or banks of 20 channels can be locked out. Single channels are excluded from the scan sequence using the L/OUT (lockout) key. To remove a bank the numerical keys 1 to 0 are subtitled 1-20, 21-40 etc, pressing the appropriate button during scan locks that bank out. Reverse the procedure to return the bank.

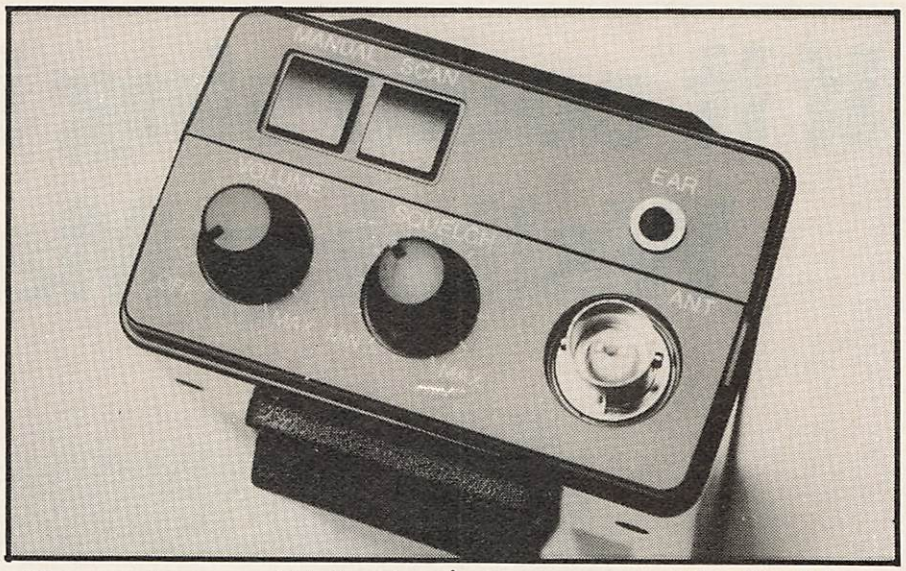
Tandy has provided a floating priority on the PRO 34. Instead of being confined to channel one, priority can be given to any of the 200 channels. A negative "P" appears in the upper left corner of the LCD, indicating the priority channel. The letters PRI displayed on the LCD tells you when the priority is activated.

To assist, Tandy has included a list of 40 of the most common "birdies" generated by the PRO 34. Being able to receive somewhere in the order of 35,000 frequencies, 40 birdies is not too bad!

In order to save on battery drain the PRO 34 has a battery saving feature. If the scanner is in the manual mode, no signal is being received and the keys are used within five seconds, it switches to standby. During the standby period the radio resets itself for a second, checks for a signal for half a second then returns to standby. Drawing only 40% of normal power, this contributes to an extended battery life. The scanner needs nine volts to operate and NICADS would be the best option. If the batteries drop below four or five volts the LCD flashes BATT, accompanied by a beep to let you know the power is dropping.

To signal the depression of a key the scanner beeps at you. This function has its critics and its fans. The tone and volume of the beep, is with the PRO 34, low enough to be heard by the operator but not so loud to attract inquisitive stares if programming in public.

The specifications for the latest Realistic are, 5KHz spacing on MID and HIGH VHF, 12.5KHz for UHF and 800MHz and 25KHz on air VHF. Sensitivity is quoted for 20dB S/N at 1uV for VFH and UHF, 2uV for air VHF and 800MHz, a SINAD reading would indicate lower sensitivity figures.



Programming my usual tried and true test frequencies into PRO 34, I was pleasantly surprised. Without an antenna attached the radio was receiving most UHF and some VHF frequencies. I would say the sensitivity specs are a little conservative.

As one of the first 800MHz scanners, it is difficult to compare the PRO 34 to its competition. To liken the Realistic to a full bore base or mobile scanner is unfair, but it did hold its own alongside its big brother — the PRO 2004. As I said earlier the PRO 32 has been retired in favor of the PRO 34. The cost however has not changed, the retail is still $579.95.

My only criticism is the scanner does not come with a NICAD battery pack and charger as standard. Tandy's logic is obvious, it sells them as "optical extras". The radio comes complete with a rubber duckie antenna, using a BNC connector, a belt clip and earphone.

In rating the PRO 34 I would say it is top shelf stuff, especially for those who like to, or need to monitor 800MHz transmissions without being tied to home or car. Journey on down to your local Tandy outlet and check out the PRO 34, I think you too will be tempted.

Thanks to Alan Goff, of Interetan Australia, for the loan of the unit for review.

If it could sing it'd sing Waltzing Matilda.

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PHILIPS

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MAKE YOUR OWN

CHEAP & EFFECTIVE ANTENNA

If you're into playing with 27MHz antennas (which don't cost a leg and an arm) then this little project should keep you gainfully occupied for about an hour or so - mind you, if you don't have a couple of suitable trees you might have to sit around for a while until they grow.

It is a simple ground-plane antenna which will cost, at most, just a few dollars.

First off you need to string a length of Nylon cord (or heavy duty fishing line or similar) between two points at a height of around four metres (13 ft.). This height is not absolutely critical, but, it does have an effect on the radials as you will find as you put it all together.

The driven element should measure around 261 centimetres (8ft. 7 in.) and this is connected to an egg type insulator (available at Tandy or Dick Smith among others) which is in turn hooked up to the support line.

This element can be either solid copper wire or insulated electrical wire - the important thing is that it is soldered to the SO-239 coaxial plug which mounts into a rectangular piece of metal (M1 on the diagram) with the outside of the plug obviously forming a grounding connection to the metal.

Also, quite obviously, the driven element does not come into contact with the metal.

The radials, each measuring around 266 centimetres (8 ft. 9 in.), can be either taken out almost horizontally from the metal (in which case you will need to lower the supporting line) or can droop from the metal at a near vertical angle. They should all be at the same sort of angle.

Obviously. the radials all need to make a metal to metal connection with the rectangular plate in which is mounted the SO-239.

Here, however, is the catch.

If the coaxial cable that you're using from the rig to the antenna is RG-11/U or RG-59/U the radials should have a near vertical 'droop' while if you're using RG-8/U or RG-58A/U the radials should be inclined at any angle between horizontal and 45 degrees.

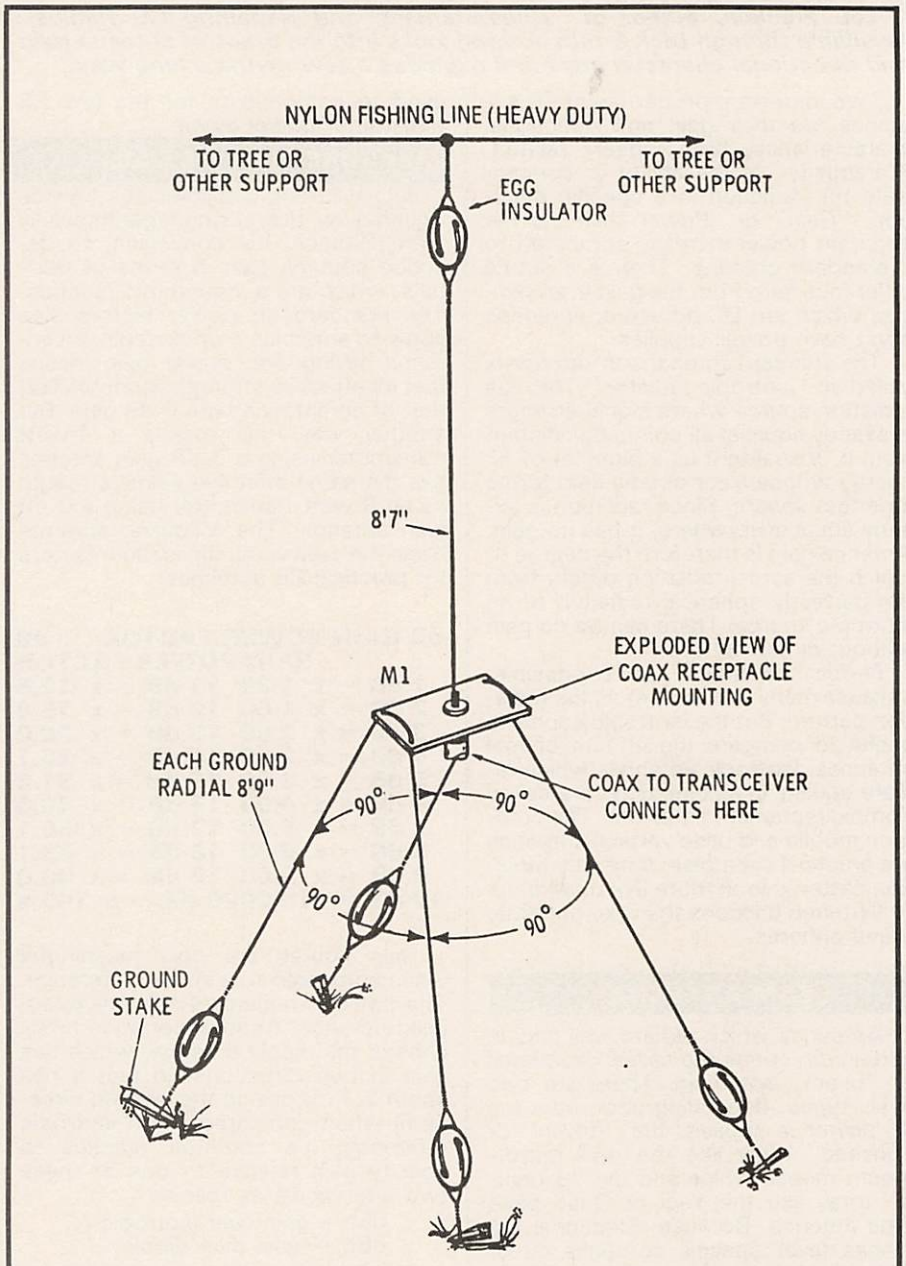
The reason for this is that the feed impedance of a straight dipole (vertical radials) is 73 ohms whereas the feed impedance of the 'image' antenna (horizontal radials) is 36 ohms - the greater the droop, the higher the impedance so 50 ohms coax is recommended for angles to 45 degrees or so.

As with any antenna of basic design such as this, you will probably find it necessary to carry out a bit of fiddling to get the minimum SWR where you want it.

That, however, is what this sort of thing is all about - fiddling around and seeing how well you make it work.

Because it is a ground plane antenna, the signal will be omnidirectional (it radiates equally in all directions), but, there might be some fall-off of signal caused by the trees supporting the top cord, house or whatever is in the way.

Obviously, if you intend to use the antenna for any length of time the point where the driven element (the top bit) connects to the SO-239 needs to be well weather proofed with Silastic or something similar.



All you need to know about . . .

Antenna Gain & Directivity

Lou Franklin, author of "Understanding and Repairing CB Radios" (available through Dick Smith outlets) looks into the areas of antenna gain and directional characteristics and explodes a few myths a long way.

Two important properties of CB antennas are their gain and directional characteristics, both closely related. "Directivity" is the ability to concentrate the radiation in a specific direction. "Gain" or "Power Gain" is the apparent power increase compared to a standard antenna. There's a subtle difference here from the gain in amplifiers, which are DC-powered; antennas don't have power supplies.

The standard comparison antenna is called an "isotropic radiator." This is a radiation source where signal strength is exactly equal at all points equidistant from it. Visualize it as a pinpoint of RF energy whose electrostatic field forms a perfect sphere. Since radiation is exactly equal everywhere, it has no gain. Antenna gain is therefore the degree to which the actual radiation differs from the perfectly spherical radiation of an isotropic source. There can be no gain without directivity too.

Perfect antennas aren't possible, because many factors distort the radiation pattern. But the isotropic source is useful to compare the effects of real antennas. Isotropic antennas which radiate equally in all directions are called "omnidirectional" antennas. The common mobile and base vertical antennas are practical examples; their true radiation patterns look more like doughnuts or flattened balloons than like perfectly round spheres.

BEAM ANTENNAS

Antennas which radiate well only in certain directions are called directional or "beam" antennas. There are two basic types, depending upon how the RF power is applied: the "driven" or "phased" array like the dual mirror-mount mobile whips and the "parasitic" array like the Yagi or Quad base type antenna. Because directional antennas favor specific compass directions and/or elevations (vertical angle above ground), radio waves concentrate in those directions and decrease in all others.

This apparent power increase compared to omnidirectional antennas has exactly the same effect as if it resulted from increasing the transmitter power. It has this effect on received signals too, amplifying those from the favored direction and rejecting all others. A beam's increase in signal strength over a non-directional antenna is called its "forward gain." Beams are commonly used to compensate for the low CB transmitter power limits.

MEASUREMENT OF GAIN

Signal strength follows the Inverse Square Law, decreasing logarithmically with distance. It's convenient to describe antenna gain in terms of decibels, which are a logarithmic function. The standard dB power factors also apply to antennas. For example, an antenna having 3dB power gain means that its effective strength is double (x2) that of an antenna with 0 dB gain. Put another way, this means a 4-watt transmitter using a 3 dB gain antenna has the same effective signal strength as an 8-watt transmitter using a 0 dB gain antenna. The following summarizes the power multiplication factors for practical CB antennas:

dB GAIN	POWER FACTOR	dB GAIN	POWER FACTOR
1 dB	x 1.26	11 dB	x 12.6
2 dB	x 1.60	12 dB	x 15.8
3 dB	x 2.00	13 dB	x 20.0
4 dB	x 2.50	14 dB	x 25.1
5 dB	x 3.00	15 dB	x 31.6
6 dB	x 4.00	16 dB	x 40.0
7 dB	x 5.00	17 dB	x 50.1
8 dB	x 6.30	18 dB	x 63.1
9 dB	x 8.00	19 dB	x 80.0
10 dB	x10.00	20 dB	x 100.4

Gain figures are only meaningful when compared to a known reference. The isotropic radiator is only one possible reference. Another common reference is the dipole antenna, which has gain in two directions. In fact it has about 2.1 dB gain in the favored directions when compared to an isotropic reference. It's common practice to specify gain relative to one of these two references, as follows:

dBi = gain over isotropic
dBd = gain over dipole

Thus to state that a certain antenna has a gain of "7.5 dB" is totally meaningless. Most CB operators don't know this and fall for misleading claims by manufacturers. For example, a two-element Yagi beam has a theoretical gain of about 7.5 dBi, which is the equivalent of 7.5 dB - 2.1 dB = 5.4 dBd. Not so impressive when expressed this way, is it? Manufacturers are famous for using dBi (often without telling you), since it's always a bigger number and therefore more impressive. Be aware! Demand to know their reference point.

FRONT-TO-BACK RATIO

Since directional antennas have power gain for receiving too, the relative signal strengths from the desired and undesired directions can also be compared and expressed in dB. For a beam antenna this is called its "Front-to-Back" ratio, or F/B. The "front" is the desired direction and the "back" is 180° opposite; i.e., if the front is facing East, the back is West, etc. So a "25 dB F/B" means that signals received from the East direction will be 25 dB stronger than comparable signals from the West.

Some antennas are "bidirectional," meaning stronger in two directions (say, East/West) and weaker in the two perpendicular directions. (North/South.)

Practical examples are the dual co-phased trucker whips. For such antennas it's really more accurate to discuss "Front-to-Side" rather than Front-to-Back power ratios.

ANTENNA RADIATION PATTERNS AND FIELD STRENGTH

A graph showing the relative strength of radio waves as a function of direction from the antenna is called a "radiation pattern" or "field intensity pattern." All real antennas radiate in three dimensions, making it hard to visualize in a book drawing, so use some imagination here.

The most important radiation fields are those in the horizontal plane or parallel to the earth and the vertical plane or elevation, the angle above the earth.

The concept of field intensity is not the same as polarization. Most CB communications are vertically polarized, but the actual field strength varies greatly.

Polarization is the orientation of the waves relative to the earth; field intensity is the total strength resulting from the entire three-dimensional field of waves. Each antenna type will have different horizontal and vertical radiation patterns affecting range.

The basis for studying horizontal radiation is the 1/2-wave dipole. It's rarely used for CB though because it's horizontally polarized, being wire or tubing mounted parallel to the earth's surface.

The pattern is bidirectional, with the strongest field at right angles to the direction of the wire. The typical "Figure 8" pattern of a 1/2-wave horizontal dipole antenna is shown in Figure 1. The strong directions are called the "lobes" and the weak ones the "nulls." In this example the lobes go East and West, the nulls North and South.

What about its vertical pattern? The dipole is radiating not only East and West, but also towards the sky and the earth, since antennas have three-dimensional fields. Therefore it also has a vertical radiation pattern to consider. This is especially true for base antennas because the height above ground has a direct effect on the vertical radiation angle of the strongest lobe(s). You can't do much about the effects of height in a mobile installation, but you can for a base antenna.

The effect of height above ground is shown in Figure 2. This figure represents a 1/2-wave dipole in free space. Imagine it's a horizontal wire sticking straight up out of the page at you, which is why you see just a dot; you're looking at it from one end. Under perfect isotropic conditions the field around the wire would be exactly the same in all directions, so the pattern shown is a perfect circle.

A real antenna isn't perfect. If placed closer to the ground (Figure 2 (B), some of the downward waves will bounce off the ground and be reflected back towards the antenna. Whenever a radio wave bounces off an object, its phase reverses. In Figure 2 (C) the antenna is a 1/2-wavelength above ground, which means it takes the time of one full wavelength to travel to the ground and bounce back; 1/2 + 1/2 = 1.

The reflected wave reaches the antenna just as the next wave appears, but exactly out of phase with it. This cancels the upward radiation, resulting in two main lobes with the maximum strength about 30° above the horizon.

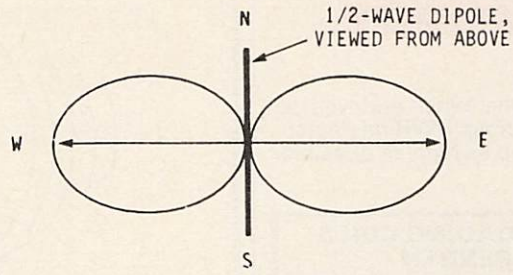
In Figure 2 (D) the antenna has been lowered to a 1/4-wavelength above ground, so some of the reflected waves arrive in phase and add to the vertical radiation. The elevation angle of the strongest field is now higher above the horizon.

This partly explains why mobile CBs have less ground-wave range than the higher base antennas; the higher angle of a mobile whip sees a closer horizon than that possible in a base, so the wave can't travel as far.

At 3/4-wavelength above ground (Figure 2 (E), the effect is a combination of the 1/2-wave and 1/4-wave height, increasing both the horizontal and vertical lobes. As the height is raised still further more lobes develop, one for each additional 1/4-wavelength above ground.

By the way, these sketches show the lobes and nulls as being very sharply defined. In reality the imperfectly-conducting earth and shifting phases cause them to blend together somewhat. don't take these mounting heights too literally when planning a base antenna installation.

FIGURE 1



OMNIDIRECTIONAL MOBILE ANTENNAS

Most mobile and base CB antennas consist of a single vertical radiating element. The horizontal radiation is equal in all compass directions, assuming there aren't any nearby objects or irregular ground conditions to distort the pattern. (In practice there always are.) Figure 3 shows the ideal horizontal pattern of such antennas. Note it's also a perfect circle like the ideal dipole, but this time it's rotated 90° so you're looking down on its top instead of horizontally end-on.

In a real installation this pattern will be distorted. The worst distortion occurs in mobile operations when the whip is mounted somewhere other than the exact center of the roof; i.e., the "ground plane" is irregular.

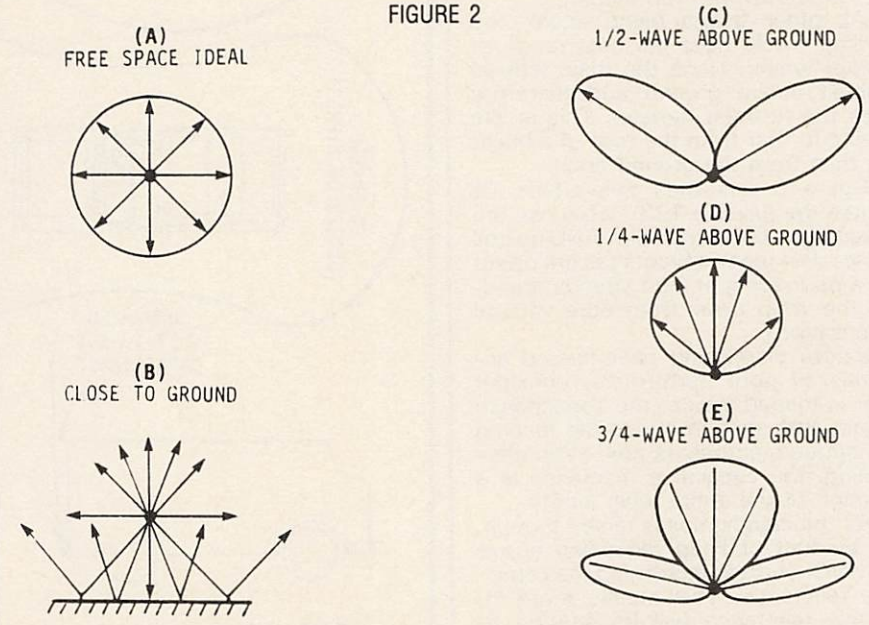
The strongest field will generally be in the direction of the greatest mass of vehicle body. With the antenna in the centre of the roof the mass is roughly equal in all compass directions and this is usually the best location, although not always practical with long whips or low garages.

With the whip on the trunk lid or a corner of the rear bumper, the pattern is distorted. Figure 4 shows this effect.

NEVER mount the whip on the bumper of a van or camper; the close proximity to the body not only distorts the pattern, but the coupling capaci-

HOW VERTICAL RADIATION CHANGES
AS A FUNCTION OF HEIGHT ABOVE GROUND
(Viewed end-on)

FIGURE 2



Antenna Gain & Directivity

(contd)

tance between the whip and vehicle body causes a serious SWR mismatch. Mount the whip up as high as possible. See Figure 5.

EFFECT OF LOADING COILS ON FIELD STRENGTH

Loading coils are added to most mobile CB antennas to compensate for capacitive reactance; i.e., the antenna is physically shorter than the required electrical length. In addition to the whip mounting location, the location of the loading coil on the whip can have a marked effect on performance.

The larger the antenna current, the greater the field strength. Since reactance limits current flow, the only part of a loaded antenna that carries a significant current is that section BEFORE the loading coil. Thus with base loading there's very little current in the rod.

With centre loading there's current from the centre down and with top loading (or the full-size steel or fibreglass whip), current flows along the entire length. (''Top-loaded'' fibreglass CB whips aren't truly top-loaded; the wire's concentrated at the top, but is continuously or helically wound along the entire length.

This effects its current distribution.) The straight length before the coil also affects radiation resistance, being higher with center or top loading than with base loading.

This makes it easier to transfer power, since from Ohm's Law $P = I^2R$ and ''R'' is higher with top loading.

All other things being equal, top loading would have the best range of loaded whips, since the main lobe is highest above ground and therefore sees the furthest horizon. This is like seeing further from the roof of a building than from the ground floor.

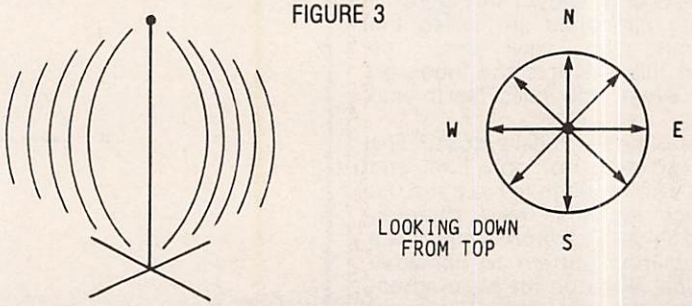
Figure 6 illustrates this effect. Of course the full-size 102'' whip has the advantages of full radiation AND no coil losses. But these advantages are offset by wind loading at high speeds, bending the whip away from pure vertical polarization.

Before dismissing base-loaded antennas as poor performers, consider this: in loaded whips, the capacitance of just that section above the loading coil appears across its coil. With base loading, the capacitive reactance is a function of the entire whip length.

As the loading coil is raised though, the amount of whip remaining above the coil is shorter, increasing the capacitive reactance. This means more inductive reactance will be needed to resonate it and that means a bigger coil.

OMNIDIRECTIONAL RADIATION PATTERN
OF VERTICAL ANTENNA

FIGURE 3

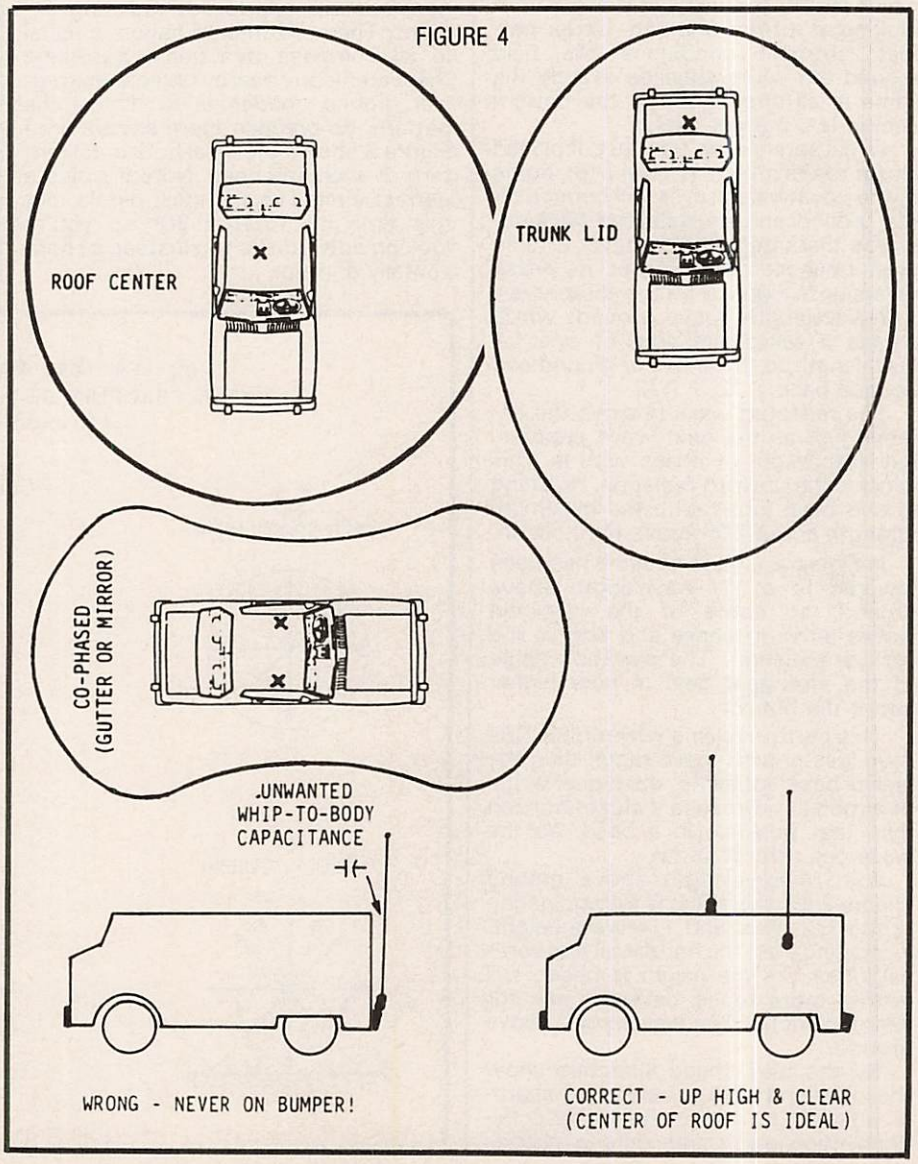


A bigger coil means more turns and thinner wire, increasing the DC resistance and therefore losing some of its advantage. You could always make the coil physically bigger to offset these losses, but then there's the problem of increased wind drag!

Selecting a good mobile antenna is therefore a compromise between available mounting location and hardware, physical size, type of loading, wind drag, looks and of course price.

As a general rule, I recommend mobile antennas at least 40'' or longer. Any of the better brands will meet this criterion and give excellent and comparable results. Avoid antenna ''bargains'' when you buy!

FIGURE 4



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HF UPLINK

Rob Williams

Welcome to the March-April edition of HF Uplink. I hope you were able to make good use of the information I provided in the last edition. This month I have some news on how to get some interesting publications.

Remember, all times are in UTC (same as GMT) and all frequencies are in KHz unless stated otherwise. International broadcast stations are in AM and utility stations are in SSB.

Satellite outages — what are they?

In the very early days of HF broadcasting, international shortwave stations broadcast directly from their own country to their target area around the world. As shortwave developed, stations saw a need to establish overseas relay stations to improve signal strengths.

Initially programs were sent to the relay station on tapes, then to improve the services and as funds became available broadcasting authorities provided HF point-to-point links (or feeder services) between studios and the relay station. These transmissions were single side band (SSB) transmissions. This meant that broadcasts were from the relay station could be in 'real time' with the studio and allowed current news programs to be broadcast. However they relied on HF radio to carry the signal and this meant that the service was subject to fading and fade-outs. This type of service continued for many years and some broadcasters still make use of this facility.

As geostationary satellites became commonly available broadcasting authorities began to use them to relay programs from the studio direct to the relay station, thus bypassing the use of HF feeder services. For the first time this allowed studio quality, 'real-time' links direct to the relay station without any distortion or fading.

However, satellites have one minor problem. As geostationary satellites are fixed in a particular spot above the earth it means that twice a year for a few days the satellite comes between the receiving station on earth and the sun, affecting reception from the satellite. This problem is called 'sun alignment outage'.

Usually outage lasts just a few minutes, but engineers need to calculate when it occurs so they can bypass the problem. The duration of the outage depends on the signal strength at the receiving station and the size of the receiving dish. To overcome the problem, broadcasters switch back to HF feeder services or telephone lines.

So, even though satellites have improved shortwave services, the old HF point-to-point SSB service still is needed in today's modern technological world.

Station program news

Listening to radio stations from around the world can allow you to get news and information as it happens. You not only receive up-to-date news but also learn a little bit about the country and its people.

But how do you find out what programs to listen to? You can't just pick up your newspaper and read a guide like you do when choosing a TV program. Well, despite many budget cutbacks over the years in international broadcasting, there are still some very good magazines available from the stations outlining their program schedule and frequencies they intend to use.

One free magazine you can obtain comes from the Voice of America (VOA). The magazine is called "Voices" and is around 28 pages. As well as details about VOA programs, it contains short stories and information about people behind the microphone. To get on to the mailing list you can write to VOA, Washington DC, 20547.

During our bicentennial year, Radio Australia produced a free bicentennial newsletter which was sent out to listeners around the world telling them what programs would be aired during that month. Our bicentennial is behind us now, but Radio Australia has decided to continue its newsletter. To get on the mailing list you can write to Radio Australia, GPO Box 428G, Melbourne, Victoria 3001 and ask to be put on the mailing list. Or you can ring (03) 235 2360, a 24-hour message recording service. For those who have a fax machine the fax number is (03) 235 2346.

One magazine which is no longer free but is still very popular around the world is "London Calling" from the BBC. "London Calling" is produced each month and is posted out before the month starts. To find out the current subscription costs write to the BBC, c/- Bush House, London, UK.

Current propagation predictions

As the shortwave bands are constantly changing it is very handy to keep up-to-date with how the bands are changing and why the station you heard yesterday is not there today. To the average DXer it's very hard to work out your own predictions, but thanks to Mike Bird at Radio Australia and the IPS Radio and Space service in Sydney, Dxers can get the latest available information needed to get the most benefit out of the hobby.

Five times a day (except Sunday) Mike Bird broadcasts a short three-minute segment over Radio Australia with current propagation predictions. The program is broadcast at 0425,0827,1225,1627 and 2027.

Radio New Zealand and the M-89 period

The tentative transmission schedule for Radio New Zealand for the period 4/3/89 till 6/5/89 shows the following frequencies in use to Australia and the Pacific:

To the Pacific at 1830-2115 on 12056 and 15150 Khz. 2345-0145 and 0330-0730 on 17705 Khz. This transmission is continuous right through on Saturdays and Sundays.

To Australia at 1000-1200 on 9850 and 12045 Khz. Between 0000-0145 and 0330-0730 and 15150 Khz, this transmission is also continuous on Saturdays and Sundays.

Confidential frequency list

For listeners to utility stations it helps to have access to some good reference books when trying to identify an unknown station. Unfortunately because most utility stations are not intended for reception by DXers, obtaining information can be hard at times.

However some dedicated DXers and organisations have managed to gather details and include them in various books. Probably the best known and widely recommended book is the "Confidential Frequency List" from Gilfer Shortwave of America. The seventh edition was published during 1987 with over 30,000 frequency listings. The book covers the frequency range 4-28 Mhz and is well worth the cost. Services is SSB, CW, RTTY and Fax are included in the book which should appeal to followers of the hobby. The book itself costs $US19.95 plus $US4 and is available from Gilfer Shortwave, 52 Park Ave, Park Ridge, NJ 07656, USA.

Aircraft notes

5628 Khz at night is a very interesting aircraft frequency to monitor. This is the Northern Pacific International aircraft frequency for the area between Tokyo and Anchorage.

DOTC publication hits the shelves

After waiting two years, DOTC has released the eighth edition of the "Radio and Television Broadcasting Stations 1988". The book is divided into three main sections:

1. RADIO — Listing details of AM and FM stations in callsign order, frequency order and by area served.
2. TELEVISION — Listing stations in callsign order, channel order and area served.
3. TECHNICAL INFORMATION — General information which will assist users of the book.

At first glance the book looks impressive with all the information a MW, FM or TV DXer would want, but beware, the book contains several errors which I discovered while comparing the information with other reliable sources.

For instance 3BA Ballarat is missing and the new ABC station for Nowra isn't included, even though it commenced operation late last year. Several entries for the ABC SRRN stations appear incorrect, when compared with data obtained from the ABC.

I've only looked at the radio listings in the book and can't comment on the TV section, but if the radio section is a guide to how the other part of the book is, then at $16.95 I can't recommend it.

I might add that DX clubs in Australia produce various publications listing the same type of information (and more), more accurately and at a cheaper price. As I get details of these publications I'll mention them in my column, together with prices.

Anyhow, for what it's worth, I have a copy of "Radio and Television Broadcasting Stations 1988" to give away, to the most interesting letter I receive during the month. Just drop me a letter with any questions or comments you may have and I'll send out a copy of the book to the author of what I judge to be the best letter received.

That's all for now. If you have any questions about what I've put in the column or want to know more about the hobby, drop me a letter with a SAE and I'll do my best to answer any questions you may have. I would also be interested in hearing from you if you have any notes for the column. My address is PO Box C-111, Clarence St, Sydney NSW 2000.

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JOHN ROWE ASKS THE QUESTION

IS THERE LIFE AFTER CB?

The article in our last issue which covered the CQ magazine world-wide DX Contest generated a surprising number of letters enquiring as to how you become an amateur.

The surprising part was that about ninety percent of the letters indicated that their writers did not even know there was a thing called amateur radio.

Many were also blissfully unaware that amateurs were allowed to use multiple bands, varying degrees of power and modes and could talk anywhere in the world without bringing down the wrath of the DoTaC gentlemen upon their heads.

On the other hand there were also a few letters which stated that the writers (as CBers) worked overseas countries anyway , used amateur equipment — and hadn't had to pass any examinations for the privilege — so why bother...!

Well, I suppose the simple answer to that is good luck to 'em.

BUSTED — THERE GOES THE FARM

The problem is, of course, that if they are busted they lose several thousand dollars worth of equipment and probably also cop a hefty fine.

I know that many years back when I was a 'pirate' (pre-the CRS shambles) I lived in fear of the knock on the door which heralded the arrival of 'the man' accompanied by the heavies.

After CB became legal I grew tired of the brain-dead, the juveniles and the Good Buddies and so elected to obtain a Novice licence which I might add took me a long time to do as I remain relatively illiterate in things electronic.

The point is that if I managed to obtain a Novice licence you would really need to be thick not to get it a damn sight quicker than me.

So, why obtain one anyway?

I think my own particular reason is that I was, and am, a DX freak - give me good skip conditions and the children start to wonder if I still live at home.

Obtaining a licence meant that I could use 80 metres (ideal for interstate QSOs most nights), 15 metres (usually has skip running somewhere despite the Sunspot Cycle situation) and 10 metres (a marvellous band when the Sunspot Cycle is peaking, but, virtually useless at other times).

During my 'pirate' days and immediately after the legalisation of CB I believed that all amateurs were 'up-themselves' and I didn't want a bar of them, but, after meeting a few 'on air' on the 11 metre band I found that most of them were friendly, helpful and keen to impart knowledge to electronically-illiterate people such as myself.

Obtaining the Novice licence means passing a written theory examination, a written regulation examination and receiving/sending morse code at five words per minute.

MORSE CAN BE DIFFICULT

Most find the morse code segment by far the most difficult, but, I found the theory almost impossible.

Let's face it, I'm a journalist and even changing a light bulb often presents difficulties so the only way I could hope to pass theory was by doing an awful lot of homework.

Having eventually obtained the licence, the question is 'was it worth it?'

My answer is "yes, without argument !".

For openers it means that I can legally own and operate amateur rigs and, while I am not permitted to run more than 30 watts PEP, this is quite sufficient (when channeled through a five element Yagi) to work the world on a day to day basis - and sheer bliss, you rarely get a 'breaker'.

NOW TWO METRES AS WELL

Yes, I know that many CBers also work the world, but, only on 11 metres — when this band is dead they can't move to 15 metres or 80m for a local/interstate chat.

Just recently Novices were also given limited use of two metres, 10 watts and FM only, however, the alloted frequencies cover all Australian repeaters which is not a bad thing when you're mobile.

I enjoy playing around with antennas and having the licence means that I can play around on three bands rather than just one and I particularly enjoy regular skeds with overseas' operators — something almost impossible on 11 metres.

Importantly, there is not the same wealth of brain-dead yobbos on the amateur bands and it's possible to have a lengthy conversation without some droob trying to drop carriers or generally make a fool of himself.

There is a sense of satisfaction at passing an examination, particularly when you do it the hard way, and while I still operate on both 27MHz and CB UHF I generally prefer the Novice bands.

This, however, probably depends on your own interest in radio.

SPUNKY YLs

If your main interest is in looking for, "spunky YLs" then you should stick to AM CB, likewise if you're a carrier dropper as you'll soon discover that modern Ham rigs have adequate notch filters which virtually eliminate the carrier and cause immense exasperation to the dropper.

If you are one of the unfortunate CB brain-dead then you'll never pass the Novice exam so there isn't much point in trying.

If, however, your horizons are somewhat broader, then you might find that Ham radio has a lot to offer and it is a fact that the amateur ranks have grown larger as a direct result of CBers moving on when they found CB too restrictive to their aims.

The one myth that really does need to be blown out of the water is that 99 percent of amateurs believe themselves to be God's Gift to Radio Communications.

This might well have been true prior to the coming of CB, but, a large percentage of today's amateurs are ex-CBers and once the CB newcomers of the past few years experience the conditions brought about by Sunspot Cycle 22 peaking you will again find a large exodus to the amateur ranks.

HAMS CAN USE 11 METRES, but...

Another point to keep in mind is that as an amateur you can still operate on 11 metres — given that you have a CB rig and licence, but, being a CBer does not allow you to operate on amateur bands — it's obvious who has the best deal.

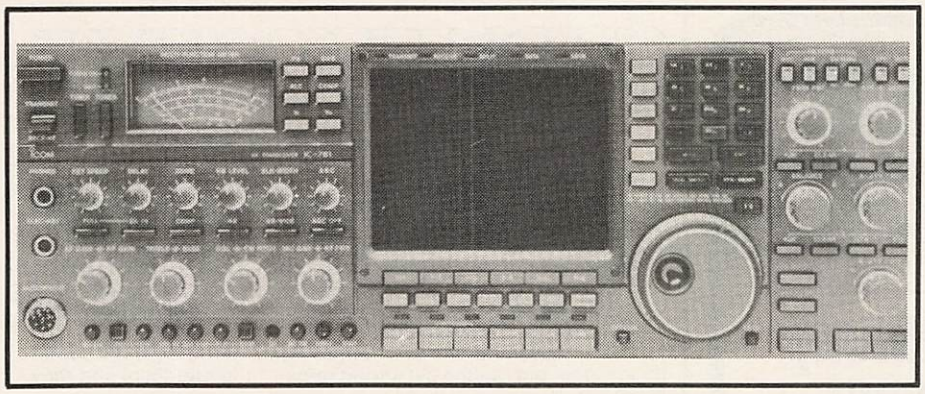
I still spend a lot of time on 11 metres as I have made many mates there, but, the advantages of being a Novice far outweigh those of being a CBer.

..and apart from that, comes next year I'll again be able to maybe work 100 countries in 48 hours during the annual CQ Magazine world wide DX Contest — and for a DX freak that's all I need.

Eventually, given the necessary homework, I might be able to upgrade to a full-call Ham and that means more bands, more power, more antennas, more DX — I like it !

YOU GET TO USE SOME NICE EQUIPMENT

As a Novice (or Full-Call) you get to legally own and operate some pretty exciting rigs. Yes, I know there's a few CBers who do that anyway, but, it sure as hell takes a load off your mind to



That's $10,000 worth of transceiver and it does everything but dance.

know the Red Indians aren't going to bust through the door and cart away your equipment plus hit you with a fine at a later time.

There are many superb amateur rigs on the market, but, there is only one which costs $10,000 - that's right - a cool $10,000 for a transceiver. It is not, however, your average rig - it is the 'state of the art' ICOM IC-781 which was released last year and is without argument the current 'ultimate' in HAM radio.

Don't get your hopes up though even if you have a spare $10,000 under the bed and are desperate to become a pirate - the IC-781 does not transmit on the 11 metre band. Sure, I bet it can be made to, but, who is going to fiddle with a rig costing as much as a small car..!

What then do you get for your $10,000 ?

For openers you get a big, very big by today's standards, transceiver which measures 425mm x 149mm x 411mm and weighs a hefty 23 kilograms.

Receiver coverage is from 100kHz to 30MHz so you can certainly listen where-ever you want to, however, it will only transmit on authorised Ham bands - and these are 10m, 12m, 15m, 17m, 20m, 30m, 40m, 80m and 160m - and, as a Novice you can only use 10m, 15m and 80m.

RIG IS COMPUTER CONTROLLED

The rig is computer-controlled and produces 150 watts PEP on sideband and 75 watts on AM (amplitude modulation), but, as a Novice you are only allowed to use 30w PEP on sideband - so even if you're fortunate enough to have a marvellous bank manager you can see that a IC-781 for a Novice is really a waste of money.

For a full-call amateur, however, it is the rig to own and no doubt about it.

Without going into technical specification it is sufficient to state that this rig hears stations which many other top quality Ham rigs don't. In comparison tests run with other Ham transceivers we have found that the IC-781 provides a workable station where other rigs don't even know that there's a station in there...

This is due firstly to its excellent sensitivity and secondly to its outstanding noise blanker, notch filter arrangement, passband tuning system - and other built-in features.

Mind you, for the sort of money you're spending you certainly expect something considerably better than just a run of the mill rig - and you get it.

It is the first Ham transceiver to incorporate a CRT Display - that is, a built-in monitor screen which allows a wide variety of operations to be carried out and viewed.

Scanning, channel memory entries plus notes and a heap of other facilities are all available including a spectrum scope which allows you to see other stations operating on the same band.

Difficult to explain, but, fantastic in operation.

There is an automatic morse code speed setting which generates CW at up to 100 words per minute when used in conjunction with an iambic paddle (an upgraded morse key), a built-in microphone compressor and gain control and of course VOX facilities.

AUTOMATIC ANTENNA TUNER

There is also a built-in antenna tuner which will bring the SWR which the rig sees back to 1:1 on any antenna with an acual SWR reading of 3:1 or less.

Naturally enough there is a frequency watch facility which allows you to talk on one frequency and also monitor another - great for working DX.

All the above is simply to give you an idea of how a 'state of the art' Ham transceiver compares with a CB rig - obviously, there's just no comparison, but then again, you can buy about 25 or so top line CBs for the price of just one IC-781.

You could also buy about five Yaesu FT757GX or Kenwood TS440 rigs for the same price .

The IC-781 has a heap of other features which we haven't bothered to mention and, while it is quite definitely 'top of the line' and not for everyone simply because of the enormous price tag, it certainly makes your mouth water when you compare it to your average CB.

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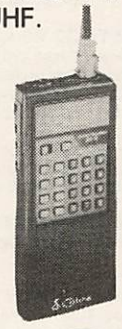

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SYDNEY SCENE

by Steve Griffin

People continually ask me why the band is full of idiots. I know there are hundreds of twits that play music, swear and carry-on, but, things haven't changed. As I said a long time ago, there is not a great deal we can do about it.

People eventually do grow up so I guess all we can do is put up with it. Some of them are well-known microphone heroes who wouldn't say boo to your face and some are a simple group that are just out to ruffle feathers.

The so-called heroes start on-air fights and mouth off something fierce, but, as the old saying goes . . . ignore them and they will go away.

Well it works most of the time.

IT WAS ALL HAPPENING AT CANBERRA

By the way the evil fairies attacked my column again last issue and cut a lot out of it due to space limitations, but, the thing that really stood out was a misquote of the possible (Nine Thirty Four) 934 MHz CB band. Somehow it ended up as 334 MHz (blame the Editor). But, that's only half of it — the street national's info was also left out due to space limitations.

Anyway, as usual everyone had a ball and many people had to sleep it off the next morning, also, a lot of people copped fines for excessive noise and hazardous, or should I say, negligent, driving.

It seems that CB in Canberra has died off a little.

At least there were a few on air on the day of the main events, but, the rest of the time it was pretty quiet. A majority of mobiles were from Sydney, but, there were also a few from Melbourne and at least one from Queensland. Overall, there was less than half the number of CBers that were there the year before, but, I did manage to get to talk to quite a few while travelling to, and from, the events.

I tell you what, if you haven't been to an event such as this before then get to it and start planning for the next one now. It's on again next New Year's weekend and it's something not to be missed.

BASE STATION COMPETITION

A few letters came in asking for more details on the base station competition that I mentioned in last issue. Well, at this stage things are up in the air, but, I can say that there will probably be a prize for the best set-up and another for the best antenna farm. A number of things have to be sorted out and a time and space worked out with the editor and typesetters, but, it shouldn't be all that far away.

Start sorting your base out now and get ready to send in those pictures.

SMALL FM RESPONSE

As yet not much of a response from FM users, but, in case you still wish to let me know your opinions please get them to me by the first week of March. I'll be eagerly awaiting to hear from any person who has used 27MHz FM and their experience while using it, including the type of equipment used and the frequencies it's based on — and where you obtained it (dealer/private etc).

Comments on this type of service and all possible 'fors' and 'againsts' will also help.

Something will probably be appearing in the next issue so keep your eyes open for an article on FM.

Another letter was aimed at the UHF repeaters or at least the lack of them. It seems that there are a lot of repeaters and a large number of pirates who wish to set up a little something of their own but there's not enough room for them. This particular person even complained that there is a definite lack of frequencies for duplexing while another person stated that he has modified his UHF so that it can be used on out of band TX frequencies.

Apparently some of the popular UHF radios can be modified quite easily.

The 'in thing' at the moment in Sydney is stolen commercial radios.

Many people say it's easy to re-program the frequencies, which it is, and make the most of the 25-40 watts of power that they can turn out. The radios seem to be hitting the market at less than a quarter of the original price and the original price can be in excess of $1500.

LEGAL FM

Here is a questionable item.

Would you believe that FM is legal on 27MHz already?

The current walkie-talkie frequencies are using both AM and FM. Tandy have a 27MHz and a 40MHz FM unit approved and a little bird tells me that several other companies have made FM handhelds and quite a few are destined for beautiful down-town Oz.

NEW SCANNERS

Also riding along with the new fad are many new scanners. Most are going to cover many more frequencies and have a much greater sensitivity than anything that has been released to date.

The use of the latest ICs will enable greater range, better selection, stops and junctions. A trend will be multi-mode, multi-memory, multi-stop and 0-999MHz frequency range. A number of units will be released within the next two years.

AMATEUR EXAMS

In a prior issue I mentioned a little something about Amateur exams to be conducted by clubs, but, DoToC has decided to put it back a while due to their fear of an inability of the clubs to accurately conduct the tests.

SKIP ON AM

While I was sitting at the desk jotting down part of this column, I was listening on the side to channel 2 AM.

A few friends were having a bit of a yap while I was busy typing and all of a sudden South Australia and Melbourne were booming in asking if we could hear them.

As I said in the last issue, the skip is really starting up again. By the time you read this I'll have a few extra QSL cards and a few South Oz and Vic stations will finally believe that we are transmitting from Sydney.

They really didn't believe that they were talking to us on AM although we tried to tell them that it happens quite a lot — but, the test questions still came flying in. Time, area, landmarks and more had to be quoted to try and convince them all.

I'm told out of band activity is pretty heavy at the moment with lots of overseas stations doing their thing. A couple of stations were in France, Belgium and England. Also, while on the subject of overseas, the US does not have a legal 80 channel service.

The many rumors that run riot around here are a little crazy. A good source in the States tells me that there have been many applications for an increase in the legal frequencies, but, nothing is planned at this stage.

Basically it works out to a pirate system.

Their 'gentleman's agreement' system is 1 to 40 is AM and 41 and over is SSB.

Sounds good to me.

Should be all around the place really.

Anyway, this year in CBA there are lots of interesting and informative articles planned and Len (Editor) is going to get as many types of things as he can to keep you all gasping for air.

That's about it for this issue.

Remember the address is PO Box 40, Gladesville, NSW 2111. Many letters have ended up in the Melbourne office and had to be re-posted to me and the 39 cent dept doesn't like it that much.

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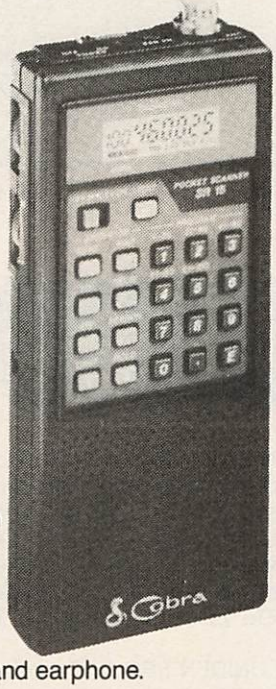

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KEN REYNOLDS (POWER BAND) REVIEWS THE NEW

UNIDEN 540e AM RIG

In many ways it is hard to quantify the difference beween a good rig and an excellent performer as they have so much in common at the basic level. Styling, quality of materials and workmanship, performance, size, controls and microphone etc. are the tangible factors, however, there is something about the sound or timbre of the retrieved signal that makes the final distinction. The UNIDEN PRO 540e is such a rig . . . it sounds great! Read on . . .

The UNIDEN PRO 540e scores well in every department except size . . . its bulk will be a factor that puts it out of the running for tidy installation in many modern cars. Not that the 540e is huge by any standard, but just big and heavy enough to be awkward in tight corners.

It weighs 1.42kg and is 172mm wide by 55mm high and 210mm deep which does not allow for front panel controls and antenna connector. Color is in keeping with the charcoal grey/black UNIDEN PRO series of CB radios released in the last few years. Control designations are in silver and the panel layout is all very neat and trim — quite an attractive little rig.

The PRO 540e is certainly an upmarket AM CB radio and naturally you would expect to get a few more than the usual frills delivered in this deluxe package. By current standards the microphone curly-cord is unusually long which will have great appeal to the masses — how many times have we heard people complaining about the shortness of mike cables which often gives rise to premature failure of an internal wire?

The cable unstretched is 680mm long and can be stretched to more than two metres long. Microphone gain is a feature of the 540e and it allows control of modulation from zero when turned fully counter-clockwise to far more than adequate at its maximum position. About midway gives very good results, however, the radio's internal modulation level limiting circuitry prevents serious over-modulation even with the control set 'flat-out'.

Our test gear indicated that the transmitted signal is very 'clean' under all modulation conditions and even with everything cranked up there was only minimal clipping and the recovered signal showed good symetry and sounded great. Four pairs of adjacent buttons offer these functions:

Dimmer switch allows two levels of brightness/display. An interesting and certainly 'pretty' function associated with this control is the back-lighting of all the PRO 540's knobs and switches.

Channel 9 priority switch is pretty standard for UNIDEN gear and also a Channel 19 priority switch which as we understand is now 'highway channel' in the US of A, the country for which the PRO series of UNIDEN rigs is intended — OZ just gets the leftovers as with most of our imported equipment. Santronic Agencies might do well to investigate the chance of modifying the rigs to select channel 8 in place of 19.

NB — Noise Blanker control — removes almost completely some types of noise while the ANL — Automatic Noise Limiter — deals well with the rest. While these circuits work very well one should not expect too much in the noise reduction area because electrical interference on the band is so insidious that it mixes into everything and the only way to completely eliminate the noise is to do likewise with the signal, so, fair go. However, as far as limiters go the PRO 540e does good stuff.

HI CUT stands for high frequency audio cut filter whose circuitry is arranged

to remove most of the high frequency audio signal which constitutes the considerable amount of hiss and crackle you usually hear with reception of AM signals. You can consider it a type of noise limiter if you like.

PA does the usual thing, turning the rig into a small public address system with the addition of a suitable speaker. Its audio output is seven watts which is substantially more than many rigs.

SWR is for Standing Wave Ratio or its common slang name — SWR. It helps you keep a check on the impedance of your antenna. The SWR indicator in our test rig indicated our SWR was a little higher than it should have been, but bear in mind that such an inclusion in any rig is just a fair indicator that things are as they should be.

Other controls from left to right are on/off/volume control, squelch, RF gain, a tone control and the channel selector knob on the far right.

The squelch control opens and closes quietly and the minimum threshold was 0.4 microvolts to a maximum setting of 1000 microvolts and the RF gain control has a huge range of 50dB — this means that if you have a received signal that shows signal strength 9 on your meter, if you turn down fully the RF gain control it will require a signal 100,000 times stronger to make the meter again read strength 9. The RF gain range on most rigs is about 20dB which is a range of 100 times.

The tone control is also very useful. Normally we don't have much time for tone controls but again, the PRO 540's circuitry really does adjust the bass and treble response of the receiver and careful adjustment can make listening more comfortable for some operators.

The highlight of the front panel is the LED display and fireworks show. In the dark watching the 540e is fascinating as incoming signals displayed on the 'S' indicator rise and fall in a row of dotted colors. The signal strength-come RF-come SWR indicator consists of 12 individual small LEDs which dance and climb in sympathy with the received signals. The number of LEDs is impressive as most manufacturers 'cheat' a bit by masking three or four LEDs to give the effect of more. The real McCoy is much nicer and gives better resolution of what is happening with signals.

The test rig was a bit mean getting started and it took a signal strength of 1.5 microvolts to turn on the first LED and 3800 microvolts to finally illuminate the last — a pretty hefty signal to say the least. Strength 9 required 34 microvolts.

The display panel also carried LEDs to indicate transmit and receive and another to indicate when the SWR function has been selected. Two large seven-segment LED displays for the channel indicator are very bright — on maximum illumination — and are colored green per the traditional PRO series of UNIDEN rigs. The green display is definitely more visible than the conventional red displays, however, we have a sneaking suspicion that UNIDEN employs high intensity light output displays in preference to most of its competitors.

It should be noted that the PRO 540e is a deluxe rig and commands a suitably higher price than more basic rigs that don't offer all the whistles and bells, so it is not fair to directly compare the rigs from different price categories.

The rear panel holds the usual jacks for PA and extension speaker and the antenna socket.

CONSTRUCTION

The PRO 540e is very well constructed in the usual UNIDEN tradition. Discrete internal wiring has been all but eliminated thus ensuring improved reliability and good efficient production techniques with minimal human soldering error. Hand soldering of wires has always been a problem in CB radio production and eliminating most of the wires eliminates most of the 'dry joint' problems long associated with the industry.

The circuit board layout is neat and tidy with the main board bolted securely to the pressed steel frame. The metalwork is good and the pressing has been clearly 'engineered' as opposed to 'belted out'.

The construction is such that all parts of the mechanical assembly reinforce each other so that quite thin steel has been used without warping or sacrificing strength.

The componentry is small and light except for a filter choke that echoes of yesteryear. It is strange to see so many components in an AM-only CB radio and in fact it contains almost as many little tackers as a sideband rig. Soldering is very good with all joints bright and shiny.

PERFORMANCE

The PRO 540e looks businesslike and in operation it lives up to expectations in most respects. Transmit power was 3.8 watts which is pretty typical but it was slightly off frequency — about 200 Hertz.

We mention the frequency error in fairness, however, since this is an AM-only rig the effect is insignificant — it just tends to spoil an almost perfect score. On-air reports indicate good transmitted audio and most people liked the range of the microphone gain control.

We've been caught before and found that a Mic gain that allows you to turn off the modulation completely can be a big trap for inexperienced players. Sometimes a little hand fiddles the control and turns off modulation. In some cases Dad only discovers what 'killed' his rig at the repair shop.

Receiver sensitivity and clarity is excellent and as mentioned earlier, the 540e has a sound that sets it apart from many of its competitors. Its response to very strong signals is unusually good and it takes a monumental signal to produce noticeable distortion of the recovered audio. With a bit of fiddling of the noise suppression circuits and the audio filtering controls it should be possible to produce the right sound for just about everybody — still, you can never please some people.

SUMMARY

All things considered, the PRO 540e is a topline AM-only CB transceiver offering a multitude of user-adjustable features. Because of its price and size it falls into a small category of sets with a limited market share.

For those regularly travelling the highways of our big country the 540e should be a serious contender and is worth considering even if you think you want a smaller, cheaper CB radio. The good points far outweigh the disadvantages. We reckon it might just be the ideal 'truckies' rig.

640e REVIEW IN NEXT ISSUE

Ken Reynolds of Powerband is certainly not given to extravagant praise and his review of the PRO 540e came about as close as Ken ever comes to saying "it's good".

When he says that a rig "is a topline AM-only 27MHz transceiver" you had better believe that it is!

We went to press just a tad too early to also include a review of the AM/SSB PRO 640e, stable mate to the 540e, and this will now be featured in our next issue.

If this rig comes up as well as the AM unit then Uniden look to already have a couple of winners for '89.

The rig is virtually identical in appearance to its AM only brother and, like the 540e, it has all the desirable features.

Built-in SWR indicator, Hi CUT key, Public Amplifier key, Microphone gain control, auto noise limiter and noise blanker — all go to make the new rig a comprehensive performer.

A full review will appear in our next issue.

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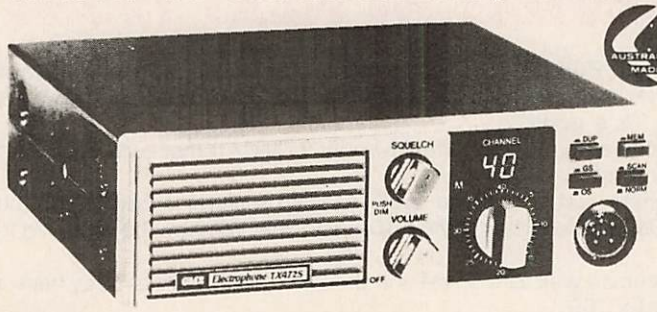

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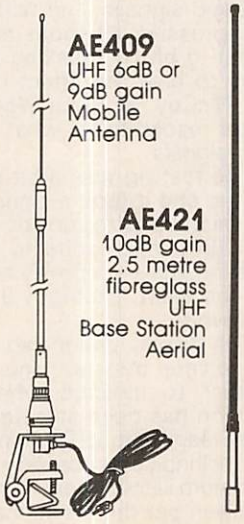

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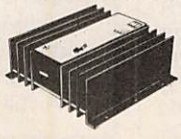


SOLAR CYCLE 22 IS LOOKING GOOD

According to the IPS Radio and Space Services (the authority which prepares propagation forecasts among other things) all indications are that the current solar cycle (#22) will be very large, and may well displace cycle 21 for the place of second highest on record (#19 is the highest so far recorded)

This is exciting news for CBers as it is well known that a large solar cycle brings with it the benefit of outstanding DX conditions on 11 metres.

If you were not on air during the last solar cycle peak in '79/'80 then it's probably difficult to imagine just what DX conditions will be like when #22 peaks in '89/'90.

As an example, during the last peak it was possible to arrange regular daily scheds with overseas DX stations coming in a strength nine day after day and for hour after hour.

Without exaggeration most overseas stations were coming in louder, by many S points, than were interstate ones.

One surprise which I had was working a Darwin station (from Melbourne) on SSB and then on AM — mind you, that was unusual so don't expect to do too much DXing on AM.

As explained by the IPS people, a side benefit of a large solar cycle is the small increase in ultraviolet radiation that accompanies increasing solar activity.

This UV energy produces more ozone in the stratosphere — around 30 km.

Thus an increase in solar activity will help to compensate for any ozone depletion that might be occurring through man-made activities.

THERE'S A LOT OF JUNK UP THERE . . .!

A further benefit of a large solar cycle is to clear out some of the unwanted artificial space debris that is currently circling in the Earth orbit.

Since the start of the space age in 1957, the number of satellites and fragments has increased to the point where there is now a real hazard to large operational structures such as space stations.

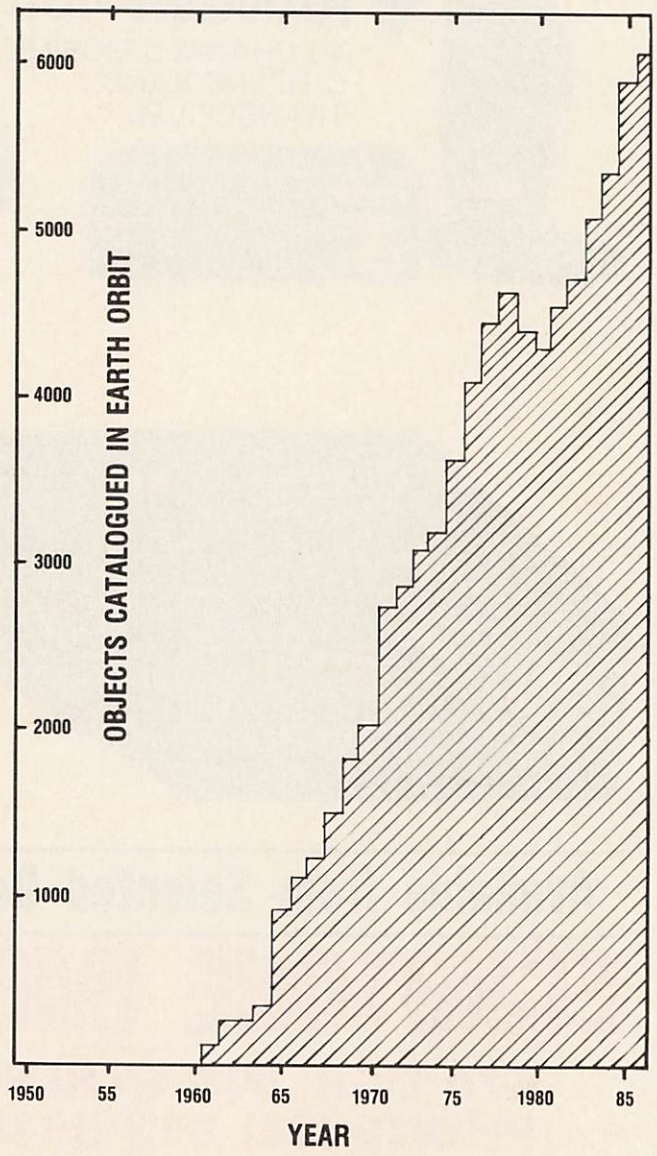
The accompanying graph shows the rapid rise in the number of objects that are tracked and catalogued by NORAD each year. **Of the 7000 pieces of material currently tracking in orbit, only five percent represent operational satellites.**

IPS did not state, but, we will, "what a bloody mess we humans make of things — even space".

IPS point out the dip shown in the years '79/'80 — the results of the increased atmospheric density around the time of the last solar maximum.

This increase was large enough to cause the rapid re-entry of many objects in the 200-400 kilometre altitude range, so, around solar maximum, the attrition rate of space 'junk' exceeded the generation rate (through launch activity and fragmentation of existing objects) for the first time since man put an artificial satellite into orbit in 1957.

Hopefully, a large cycle #22 will help to remove unwanted items from this man-made reservoir of potentially lethal projectiles.



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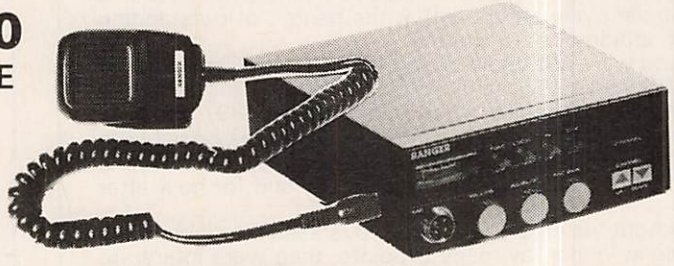

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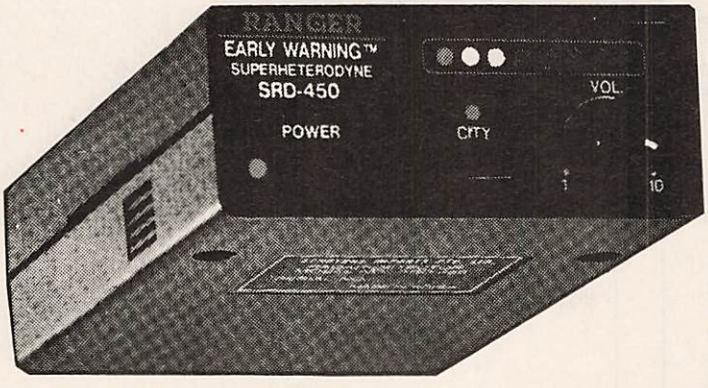

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Don Stewart with . . .

OUT WEST

Decisions, decisions, always decisions — I have agonised over this one for some months now and have finally decided YES. So this is it — the last contribution from yours truly under the OUT WEST banner — I might sneak the odd item in from time to time, but OUT WEST is now officially looking for a new scribe.

I can't say that it has not been fun, because it has — all five and a half years of it — and it has certainly been an education, but what finally clinched the decision was that I came blithely up to deadline and had to face the fact that I have been so busy, and so far out of the mainstream of CB, that I had absolutely nothing to write about.

I thought about this a few months back but fought it off, mainly through pigheadedness I suppose, after all, we all like to think we are doing a great job and are completely indispensable don't we, but I know there are scribes out there who can run rings around me and are just itching for a shot at it — so here's your chance, go to it.

Dare I suggest that we make it a sort of competition — each hopeful reporter to write up a column (about 1000 words) as though they were already the regular OUT WEST writer and let Len, our trusty editor, pick the best.

The runners-up will no doubt receive a 'thanks-for-trying' note and the winner will see his/her efforts in print and, in due course, receive their first pay cheque.

Yes, we do get paid for this — not enough for a life of luxury, as our friend Rod once pointed out, but it keeps ribbons in the typewriter and, if you save up, a bottle of champers at Christmas time.

Just to start you all off on the same footing, I had better sort out a few of the rules of the game.

The deadline for the next issue should be about March 10th — that is the date for it to be on the editor's desk, not in the mail, so post it a few days before that to be sure.

If you don't have a typewriter get somebody to type it for you or it will not get past the waste basket.

Use good white paper of at least A4 size and double space everything — for the uninitiated this means typing as normal, but on every second line instead of every line — this leaves space for the editor to correct your punctuation or spelling or put in an instruction for the typesetter.

Nobody ever gets through with a clean sheet.

On the top left hand side of each page put the heading OUT WEST and put the page number in the middle at the top — this makes it easy to put things back together if the pages get separated.

Put your name on the top right of page one.

Make a clear distinction between different topics in your write-up — a short line of stars will do. Write a brief covering note to tell the editor a bit about yourself, post it off and hope for the best.

I wouldn't try to tell anyone what to write about or how to do it, but, do a bit of research to make sure you have all the facts, don't try to use the column as a soap-box for a particular group or interest and be discreet if you take pot-shots at somebody — you could end up in court.

Best of luck and I look forward to reading an interesting OUT WEST next time — that will make a nice change won't it?

By the way, if you are a bit uncertain about how much makes 1000 words (that sounds a bit silly, but you know what I mean), just count the words in your first ten lines, divide that by ten to get a line average and multiply the average by the number of lines you have written.

★ ★ ★

A few days ago I heard a couple of people on air discussing the new channel five repeater at Mt Barker. The story they had was that, as there are no spare channels with so many repeaters in the area, channel five was given to them as a general use repeater.

I took this with a grain of salt, as laid down in the manual, and proceeded to do some checking.

I can tell you now that all the laws are still intact and that channel five Mt Barker is the same as any other channel five repeater — it is for emergency use only and you'd better believe it.

While we are on emergency repeaters, I have a parting request for all the CREST, REACT, ACRM, RED LIGHT or whatever emergency monitors — please reserve your monitoring activities, "special" callsigns and so on for the emergency channels, that is where people will call if they are in trouble and cannot get other help.

It seems the thing these days for monitors to adopt a general use repeater, probably because they can not access a channel five repeater and never hear anything on 27 MHz channel nine, and announce, frequently, that they are available to handle any little problem that might crop up.

The main problem with this is that the monitor, having nothing to do but sit and listen, gets bored and, being on a general use channel, strikes up conversations with anyone and everyone who will talk to them — for three and four hours at a stretch — until the people who would normally keep an ear open for their set firing up, get fed up with it and switch off, or some fool will start dropping carriers and cause a general stir up.

In my own region I could name three or four experienced operators in each town who, collectively, would be on air for most of any 24 hour period.

Each of them would be willing and able to handle any emergency call they hear, so what use do they have for a special monitor who can turn the simplest call into a major exercise without even trying because he has to, "get all the details for the report to headquarters".

I have never been able to understand why a report of each incident has to go to some remote HQ.

If the police have any reason to follow up on the call they will go to the operator, not his HQ.

The only thing HQ can do with reports is to show off a big stack of them and say "our people handled all these calls, so this proves that we are needed out there.".

On the emergency channels yes, but on the others?

Thanks all the same, but we get along by ourselves.

As I have said before, I am not anti monitor, in fact I consider myself to be one in my own way, but God preserve me from the over zealous monitor group member.

★ ★ ★

And on that note I must depart.

Many thanks to all the readers who phoned or wrote to me over the years, I hope I can catch up with each of you on air some time.

I hope I have been able to help some readers along the way and I hope the new scribe will do even better.

You could well hear from me again — as I said in the beginning, I might sneak the odd item in — I might even find time to knock out a short story or two.

Cheers all.

RADIO AUSTRALIA VIA ABC DOMESTIC STATIONS

When David Hill came to the ABC he made one important change to Radio Australia that has been very succesful.

They say that Radio Australia is Australia's best kept secret. The reason being that people within Australia can't hear Radio Australia without a shortwave receiver and then it is sometimes difficult. In fact when some announcers go overseas they are celebrities, but in Australia are almost strangers.

With most mediumwave commercial stations broadcasting 24 hours a day, there was support from within the ABC for the ABC to broadcast 24 hours. This would involve very little extra cost to maintain the station on a 24-hour basis. David Hill decided that Radio Australia should be broadcast on domestic MW ABC transmitters in the midnight-to-dawn period.

Between 0000 and 0530 Australian Standard Time and 000-0530 Western Standard Time, Radio Australia is broadcasting on the following stations:

2FC Sydney on 576 Khz; 3AR-Melbourne on 631 Khz; 6WN-Perth on 810 Khz; 5CL-Adelaide on 729 Khz; 4QG-Brisbane on 729 KHz; 2GU-Goulburn on 1098 KHz; 2NA-Newcastle on 1512 KHz; 7ZR-Hobart on 936 KHz; 3BA-Albury-Wodonga on 990 KHz; 3WA Wangaratta on 756 KHz and by satellite relay in regional centres across Australia.

When you listen to Radio Australia on mediumwave and compare it with the shortwave transmission you notice a slight delay between the two services. The delay of about 0.5 seconds is because the ABC makes use of Aussat satellite channels to relay Radio Australia around the country. To get the signal from the studios of Radio Australia in Melbourne out to all the transmitter sites requires two trips to the satellite.

Rob Williams

'BACK TO YOU...'

Letters from readers are welcomed. They should be type-written and present an interesting viewpoint.

I was given a CB radio as a birthday present and was told that the aerial needed Swering or, tuning, or something like that. I haven't been able to find anyone who can assist me in this matter, perhaps CB ACTION can shed some light on the subject.

John Sutherland
Altona — Vic.

The information you were told is correct, your antenna will most likely require tuning to suit the operating circumstances. The majority of 'cheaper' model antennas do require adjusting to maximise their performance while presenting the proper operating load to the transmitter in your rig.

These days a number of the better grade antennas are already pretuned accurately enough to ensure that no adjustments are necessary before transmitting into the antenna.

SWRing is a bastardisation of the acronym S.W.R. which stands for Standing Wave Ratio or more aptly, Voltage Standing Wave Ratio — V.S.W.R.

To cut a long story short, tuning or SWRing your antenna relates to the measure of operating efficiency of the antenna.

When your antenna is tuned correctly almost all the power leaving the transmitter will be radiated by the antenna, however, a poorly tuned aerial will not radiate the power well and since the power having left the transmitter must go somewhere, it is 'reflected' back down the transmission line and back into the transmitter where it meets more power coming the other way.

So, the SWR of your antenna is really a measurement of ratio between the amount of power leaving the transmitter and the power remaining which the antenna is unable to use.

CB antennas are usually tuned by adjusting the length of the whip and when the aerial is new it is usually slightly too long for the operating frequency and must be 'trimmed'.

To aid in tuning an antenna use is made of a device called — you guessed it — a VSWR meter which is able to differentiate between power going to the antenna (Forward Power) and unused power being returned from the antenna — (Reflected Power).

To achieve the best antenna efficiency you will be looking to maximise the Forward Power and of course you will want to minimise the Reflected Power.

By taking a measurement and then adjusting the antenna and taking another reading it is possible to judge your progress.

The adjustment process is continued until the minimum SWR or reflected power is achieved.

Antennas which require removal of material to adjust the tuning should be handled with care as it is easy to cut off too much length and have the antenna go out of tune in the opposite direction.

If you decide to do-it-yourself make sure you understand the instructions properly before you begin or you could well be in for an expensive lesson.

If in doubt — and it could save you buying a SWR meter — most CB shops will offer a tuning service for a nominal fee — about $5 — and this removes the responsibility from yourself.

In all cases, if you suspect your antenna requires tuning, make sure you get it checked by someone reliable because a bad VSWR can cause serious damage to your radio.

CB WITH 120 CHANNELS

On a recent trip to Hong Kong I bought a CB radio that offers SSB/AM and FM operation and has 120 channels. The radio sounds like it is trying to work ok but as yet I have not been able to talk to any other stations. A friend told me that it might have the wrong channels — do you think this is possible?

Ron Marks
Manly — NSW

Your friend is more than likely right about the channels.

The radio was probably intended for the European CB market where they use a different range of frequencies from us in Oz. The radio however, is what you might term a 'Pirate' rig and would not be legal to use or be licenced anywhere on the CB globe.

We know of no country's CB radio service that allows the use of 120 channels or the use of all three transmission modes i.e. SSB single sideband, AM amplitude modulation and FM frequency modulation.

Most of Europe has a different 40 channel allocation from us and they also use FM transmission as opposed to AM/SSB used in Australia, USA and now New Zealand.

The 120 channel radios are generally masqueraded as Ham radio rigs and as such they manage to bypass customs regulations which prohibit the import of such equipment.

CB LICENCE

Do I need a licence to use my CB radio and if so how and where can I get one and is it expensive?

J. Dunne
Caboolture — Q'lnd

To stay on the right side of the law you are required to have in your possession a current CBRS licence — (Citizens Band Radio Service).

The regulatory and licensing authority is now DoTaC — Department of Transport and Communications — alias DoC Dept of Communications, alias P&T — Post and Telegraph Dept.

DoTaC is a Commonwealth Government Department and has offices in each State and Territory and the details of each Capital city address are printed here.

Most States also have several regional offices, however, licence application forms may be obtained from all State offices upon request.

All you need to do is phone or write to your nearest DoTaC branch and ask for the appropriate application.

Make sure you specify a CB licence application as they are now different from other licence forms. The present cost of a licence is $14 per annum for each CB radio that you licence.

On the back of the application form is a little note explaining that the maximum penalty for operating unlicensed radio equipment including all mobile stations is $10,000. So, it seems that a $14 CB licence could well be cheap insurance policy.

DEPARTMENT OF TRANSPORT AND COMMUNICATIONS HEADQUARTERS

Assistant Secretary, Benjamin Offices, Belconnen Canberra 2617 (Postal P.O. Box 34, Belconnen ACT 2616) (Telex AA62025) Facsimile (062) 64 4608)

STATE AND TERRITORY OFFICES

NEW SOUTH WALES

State Manager, Upper Ground Floor, MLC Building, 105-153 Miller Street, North Sydney 2060 (Postal P.O. Box 970, North Sydney 2060) (Telephone (02) 922 9111) (Telex AA24624) (Facsimile (02) 922 7351)

District Radio Inspector, Australian Government Offices, 218 Molesworth Street, Lismore 2480 (Telephone (066) 21 6393) (Telex AA66284)

District Radio Inspector, Suite 8A, 1st Floor, Tonella Commercial Centre, 125 Bull Street, Newcastle West 2302 (Postal P.O. Box 5190c, Newcastle West 2302) (Telephone (049) 26 4199) (Telex AA28170)

District Radio Inspector, Suite 2, Corner Bourke and Marius Streets, Tamworth 2340 (Postal P.O. Box W75, West Tamworth 2340) (Telephone (067) 66 7211) (Telex AA63318)

District Radio Inspector, 15 Trail Street, Wagga Wagga 2650 (Postal P.O. Box 808, Wagga Wagga 2650) (Telephone (069) 21 1855) (Telex AA69750)

District Radio Inspector, Australian Government Offices, 86-88 Market Street, Wollongong 2500 (Postal P.O. Box 1766, Wollongong 2500) (Telephone (042) 28 9611) (Telex AA29112)

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State Manager, 10th Floor, Aviation House, Corner Wickham and Ballow Streets, Fortitude Valley 4006 (Postal P.O. Box 555, Fortitude Valley 4006) (Telephone (07) 52 8822) (Telex AA41528) (Facsimile (07) 52 3132)

District Radio Inspector, Lonsdale Court, Corner Walker and Targo Streets, Bundaberg 4670 (Postal P.O. Box 862, Bundaberg 4670) (Telephone (071) 72 2111)
(Telex AA49688)

District Radio Inspector, State Government Insurance Office, Corner Shields Street and The Esplanade, Cairns 4870 (Postal P.O. Box 1225, Cairns 4870) (Telephone (070) 51 4333) (Telex AA48055)

District Radio Inspector, 2A Sydney Street, Mackay 4740 (Postal P.O. Box 337, Mackay 4740) (Telephone (079) 51 1828) (Telex AA48527)

District Radio Inspector, 6 East Street, Rockhampton 4700 (Postal P.O. Box 1401, Rockhampton 4700) (Telephone (079) 27 6922) (Telex AA49170)

District Radio Inspector, Townsville Commonwealth Centre, Walker Street, Townsville 4810 (Postal P.O. Box 522, Townsville 4810) (Telephone (077) 72 9555) (Telex AA47149)

SOUTH AUSTRALIA

State Manager, 5th Floor, QBE Building, 108-116 King William Street, Adelaide 5000 (Postal P.O. Box 2248, Adelaide 5001) (Telephone (08) 212 2153) (Telex AA88200)

District Radio Inspector, 40 James Street, Mount Gambier 5290 (Postal P.O. Box 1545, Mount Gambier 5290) (Telephone (087) 25 6170 (Telex AA80030)

District Radio Inspector, Customs House, Horwood Street, Whyalla 5600 (Postal P.O. Box 575, Whyalla 5600) (Telephone (086) 45 5999) (Telex AA80481)

TASMANIA

State Manager, 1st Floor, Continental Building, 162 Macquarie Street, Hobart 7000 (Postal P.O. Box 63, Sandy Bay 7005) (Telephone (002) 20 5011) (Telex AA58265)

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State Manager, 5th Floor, 14 Queens Road, Melbourne 3004 (Postal P.O. Box 6444, St Kilda Road Central 304) (Telephone (03) 266 8921) (Telex AA37503) (Facsimile (03) 267 5293)

District Radio Inspector, MLC Building, 104 Curtis Street, Ballarat 3350 (Telephone (053) 31 1317) (Telex AA36904)

District Radio Inspector, 56 Nunn Street, Benalla 3672 (Telephone (057) 62 3288 (Telex AA56137)

District Radio Inspector, 1st Floor, National Mutual Building, 5 View Point, Bendigo 3550 (Postal P.O. Box 40, Bendigo 3550) (Telephone (054) 43 1110) (Telex AA37257)

District Radio Inspector, Suite 5A, Bass Court, 398 Raymond Street, Sale 3850 (Telephone (051) 44 4555) (Telex AA55228)

WESTERN AUSTRALIA

State Manager, 1st Floor, 256 Adelaide Terrace, Perth 6000 (Postal P.O. Box 6189, Hay Street East, Perth 6000) (Telephone (09) 325 5877) (Telex AA93772)

District Radio Inspector, Suite 5, Lawson Street Shopping Centre, South Hedland 6722 (Postal P.O. Box 2419, South Hedland 6722) (Telephone (091) 72 2333) (Telex AA99526)

AUSTRALIAN CAPITAL TERRITORY

District Radio Inspector, Shop 5, Level 3, Block F (Aqua), Benjamin Offices, Belconnen 2617 (Postal P.O. Box 132, Belconnen 2616) (Telephone (062) 64 4677) (Telex AA62368)

NORTHERN TERRITORY

District Radio Inspector, Custom Credit House, 83 Smith Street, Darwin 5790 (Postal P.O. Box 2540, Darwin 5794) (Telephone (089) 81 5566 (Telex AA85341)

ILLEGAL DX?

In your last issue you said in the letter's page that it was illegal to work overseas skip.

How then is it that I often hear Australian station talking to overseas stations?

They are usually up around channels 35 to 40 and most of them are bloody rude if you try to have a normal QSO on one of these channels.

Ken Rounds
Nedlands — W. Aust.

Ken, you appear to be somewhat slow on the uptake.

It is illegal to work overseas DX, however, thousands of stations do it every day and the upper channels are where they mostly operate.

Either there — or higher.

You have every right to hold a normal QSO on these channels as DXers do not have any priority use — but — it's nice if you stick to the lower channels for local QSOs.

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No other antenna combines all these features:

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THE EAVESDROPPER SW ANTENNA

If you enjoy listening to short wave broadcasts but figure your antenna could do with some improvement, the American designed and built 'Eavesdropper' might just be what you're looking for — at $135 it comes complete and ready for use.

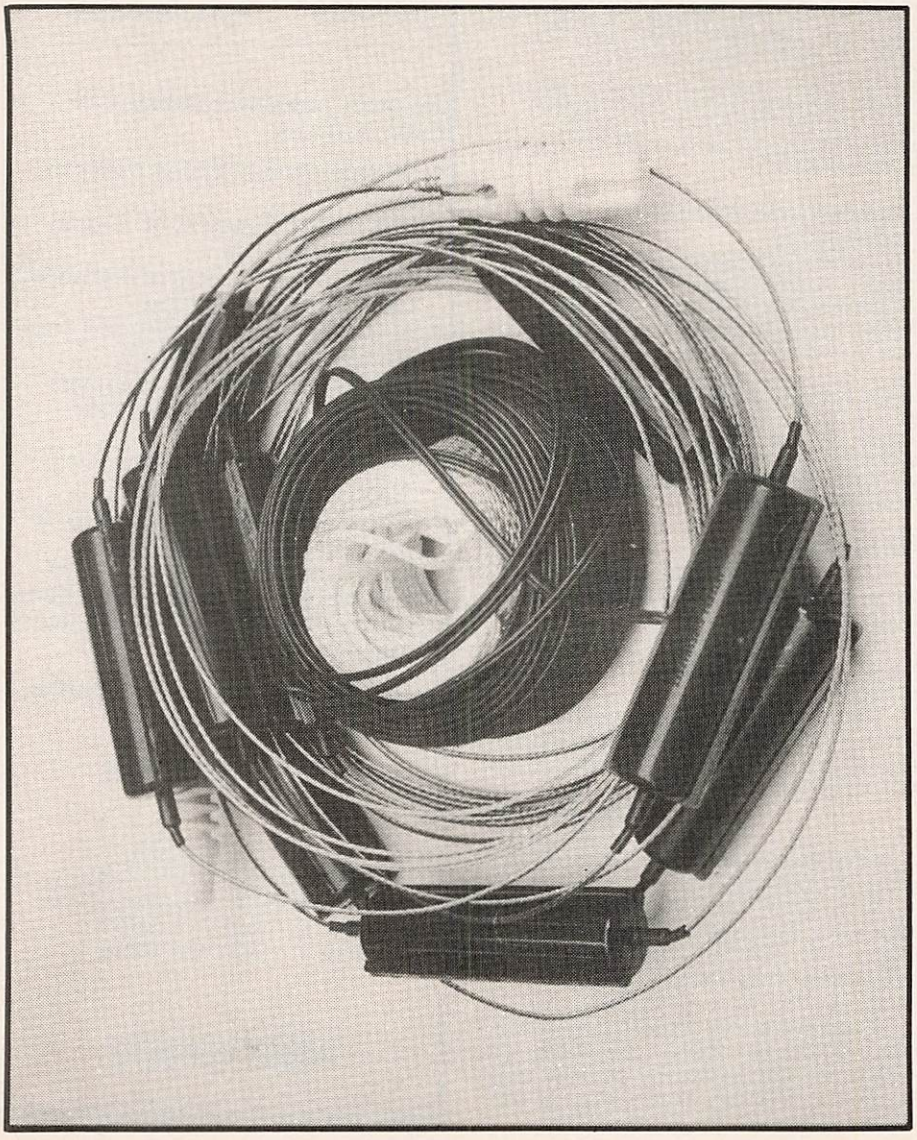
I am not a fanatical short wave listener, however, I do spend some time tuning around various frequencies and I enjoy listening to short wave broadcasts — particularly the news segments.

I started off only using a length of wire strung across a couple of trees in the backyard and some time later I upgraded to a length of wire strung across the same couple of trees but this time using an antenna tuner.

While the results were sufficiently good to pull in a lot of SW DX, I accepted the fact that my antenna arrangement was far from perfect and, despite enquiries, there did not seem to be much available that was better than my random piece of wire and the ATU.

Happily, there recently arrived in the office 'The Eavesdropper' — a short wave broadcast receiving antenna made by the Antenna Supermarket of Illinois — and sold in Austrlaia by Taitronics.

It is essentially a trapped half-wave dipole, specifically designed for short wave receiving and providing full coverage of the 11, 13, 16, 19, 25, 31, 41, 49 and 60 metre bands.



It incorporates high Q parallel-tuned traps with automatic bandswitching by the trap circuits. This means that you do nothing more than tune your receiver to the desired band and listen — the antenna does the rest.

The antenna comes complete and ready for use.

It comprises of just under 13 metres of heavy 14 gauge copper wire along which are a number of fully sealed traps. In the centre of the antenna is a simple balun to which is attached some 30.5 metres of 72 ohm transmission line.

There is also 15 metres of 450-pound tested nylon rope to hang the whole shooting match up in the air.

It also comes with comprehensive instructions for installation, however, if you can tie two pieces of rope to a tree, cut the transmission line to the length required and then attach it to your receiver, you don't really need much by way of instructions.

One point which must be stressed is that 'The Eavesdropper' is a **receive only antenna.** If you attempt to use it for transmitting you will destroy the traps and convert a perfectly good antenna into simply a length of copper wire.

That it works extremely well became evident after some comparisons with my random length of wire into the ATU. The purpose-built antenna was a mile ahead and was pulling in stations at anything up to five S points better than did the piece of wire.

Being a dipole antenna, 'The Eavesdropper' has its best reception from stations at right angles to the direction of the antenna wires, but, it still worked extremely well on stations to either end.

It is designed to be suspended from the centre of the antenna 25 feet above the ground and, ideally, in the clear and well away from buildings.

The location of mine is far from perfect as its height at centre is only about 18 feet and it runs parallel to and within a couple of feet of a building — but even in this far from ideal location it works considerably better than anything else I have tried previously.

The antenna is extremely well built, rugged, easy to erect — and works well.

Given sensible treatment, there is no reason why it shouldn't be working as well in 20 years as it is today.

It sells for $135 including shipping and to my knowledge is only available direct from the importer — Taitronics, 1/17 Childs Road, Chipping North 2170, telephone (02) 727 9051 or fax (02) 724 6828.

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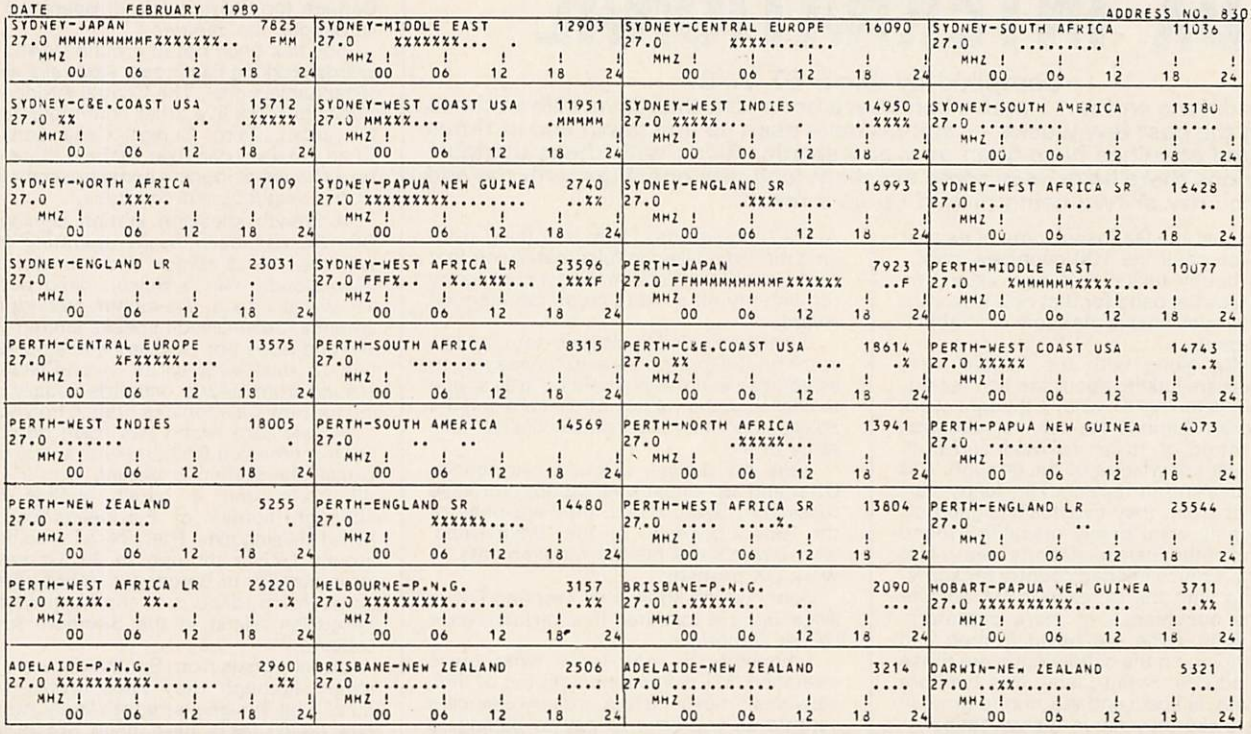
0000	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
0100	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night
0200	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM
0300	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM
0400	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM
0500	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM
0600	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM
0700	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM
0800	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM
0900	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM
1000	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM
1100	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM
1200	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM
1300	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon
1400	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM
1500	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM
1600	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM
1700	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM
1800	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM
1900	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM
2000	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM
2100	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM
2200	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM
2300	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM

With this chart you can convert standard time in any time zone to GMT or tell what time it is in other parts of the world. To correctly use this chart visualize each horizontal line as a complete circle. From your time zone tracing horizontally to the right (Counter Clockwise) it will be tomorrow when you pass midnight and yesterday when you pass the international date line. To the left (Clockwise) it will be yesterday when you pass midnight and tomorrow when you pass the International date line. There is no change in date when you pass both midnight and the Interantional date line going in one direction. For instance at 8 PM in New York Eastern Standard Time it is 2 AM tomorrow in Berlin, Germany and 11 AM tomorrow in Sydney, Australia. Always trace in the shortest direction from your time zone to find what time it is in any other zone.

DATE FEBRUARY 1989 ADDRESS NO. 8303



These GRAFEX style predictions present in pictorial form the expected HF propagation conditions between Australia and a number of important DX areas. For each circuit, the "East" terminal refers to the eastern half of Australia. The horizontal axis of each graph represents the hours of the day in Greenwich Mean Time from 0000 hours to 2300, reading left to right. The vertical axis represents increasing frequency.

A GRAFEX symbol represents the predicted propagation conditions for a particular frequency at a particular time. The meaning of each symbol used is given in the key on the next page. The letter "F" designates the best conditions for HF communications.

Grafex prediction charts supplied courtesy of the Ionospheric Prediction Service, 162-166 Goulburn Street, Darlinghurst, NSW. IPS offers pre-recorded telephone information. To access the service, please phone (02) 269 8614.

LEGEND TO GRAFEX SYMBOLS

Propagation is possible but probably on less than 50% of the days of the month.

'%' Propagation is possible on between 50% and 90% of the days of the month.

'F' Propagation is possible by the First F modes on at least 90% of the days of the month.

'E' Propagation is possible by the E modes on at least 90% of the days of the month.

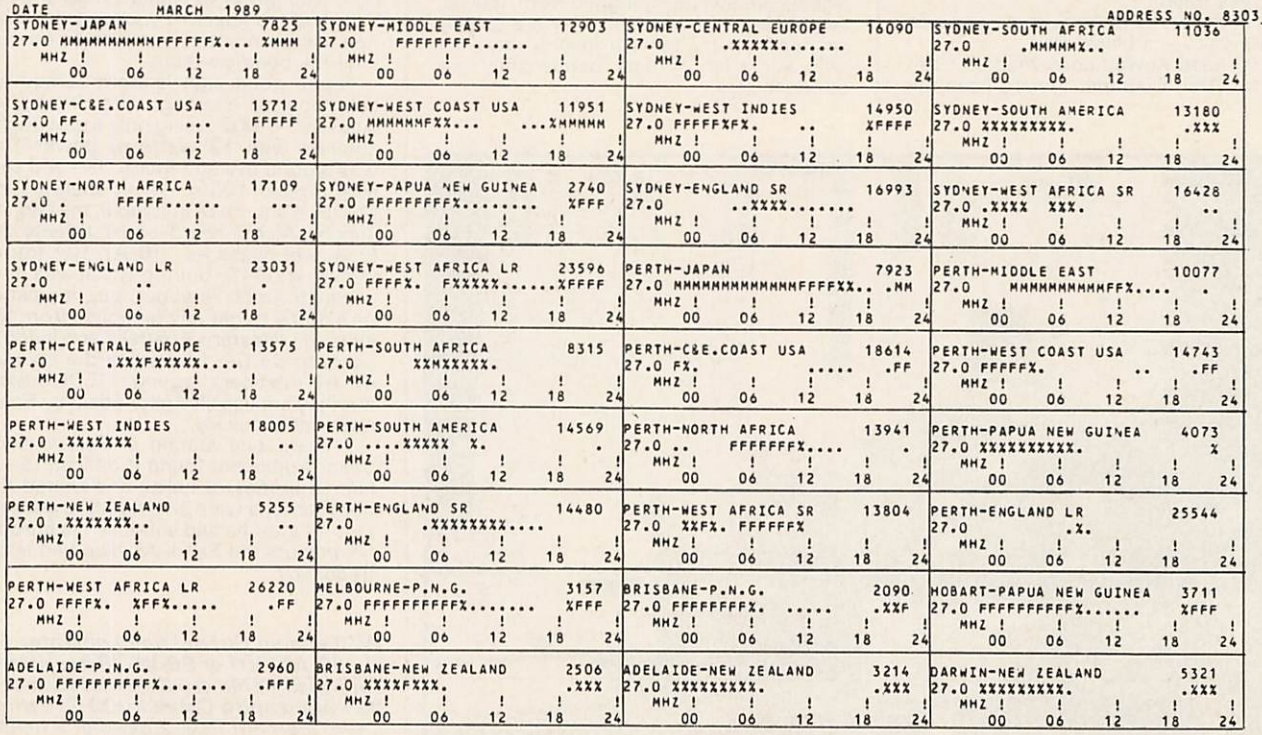
'M' Propagation is possible by both the First and Second F modes on 90% of the days of the month.

'S' Propagation is possible by the Second F mode on 90% of the days of the month.

'A' High absorption — above the ALF but probably too close to it for good HF communication.

'X' Complex mixture of modes including the Second E mode.

DATE MARCH 1989 ADDRESS NO. 8303



DX INTERNATIONAL

Compiled by Jack, 67-W-07

Conditions on the 11 metre band have been less than favorable at times during the past few weeks — signals have been up and down and at times the band openings have been poor and erratic. Along with these unstable conditions there have been some excellent longpath openings with the odd new country or two being picked up as a result.

I find that the DX loses some of its zest when you pass the 100 countries mark.

The hobby takes on a new aspect as you search the band for that new one, but, instead all you hear is the same old 'rabble' so to speak.

Usually, along with the 'rabble' new countries are lurking about too and recently I was listening to what I thought were two Italian stations (as the conversation was centred on Italian railways and both had a vast knowledge of the network and were speaking in Italian). The funny part was that when they eventually signed off and signals were barely readable I found that one of the 'Italian' stations was in fact in Malta, a much needed country for some.

Along with the increase in DX activity and the appearance of more operators, many radio clubs are being formed and also jumping on the band wagon are those wretched QSL Swap Clubs. Yes they are back with us again and starting to grow in numbers like they did in the seventies.

Only recently I received a QSL card from a station in Ireland and he included 6 other QSL cards from various countries requesting me to pass them on to a friend, along with some application forms to join the swap club located in Spain.

I passed the QSL cards to a friend alright, they went straight into the garbage tin along with the applications!

I despise QSL Swap Clubs as they defeat the whole purpose of receiving a QSL card, a confirmation of a radio contact, not to mention the fraud side of the hobby either, yes fraud!

Out of the six cards he sent me one was from Kuwait — a blank card.

Now I need Kuwait confirmed so I can apply for Arab Countries Award from the Alpha Tango group. There is nothing stopping me from filling in false details on that card from Kuwait and mailing a photocopy off with my other Arab cards claiming the award.

Just to be safe I could also enter a false entry on the log too as a last measure, so as you can see there would be little scope to challenge the validity of the card and the so called contact that actually did not take place at all.

Take my advice, if you are a serious DXer and an honest one, do not patronise these QSL Swap Clubs, they are only for the 'Good Buddies' or the 'Brain Dead' who haven't the mental requirements to work DX properly.

Sure, we all know that working DX is illegal but it is tolerated to a certain extent by the authorities.

I honestly do not know what these wretched QSL Swap Clubs get out of their activities, maybe it's a money spinning venture as you have to pay to belong to their network, but, as far as the QSL cards are concerned I cannot see their point, especially when DX is so easy to work these days.

If you get them, throw them in the bin!

AFRICAN & INDIAN OCEAN REGIONS

Signals out of northern Africa are starting to pick up a little even though the noise from Europe still remains a problem. Weak signals are still being logged from Tunisia, Algeria and Morocco but they are quickly snapped up by the Europeans, but, it's only a matter of time before they get stronger here.

There has been some activity from the Central African Republic with a lady named Barbara (no callsign noted) operating out of Bangui, the capital.

She has been noted around 0445z onwards working East coast Australia with a reasonable signal. The Central African Republic borders five other countries, namely: Sudan, Zaire, Congo, Cameroon and Chad, so if we can hear Barbara there may be a chance of logging some operators out of the neighbouring countries.

A French speaking station signing as DC-155 has been heard operating from war torn Mozambique and the operator, Jean-Claude uses a Belcon radio putting 15 watts into a five-eighth groundplane antenna. Jean-Claude speaks limited English and does not QSL as he has no facilities to deal with cards. Jean-Claude is around from 0430z onwards usually calling for New Caledonia or French Polynesia.

Amsterdam Island has been noted at various times on the band with a very poor signal, the station is signing with a 124-AT prefix and is barely audible here although hordes of Europeans can be heard chasing him. The 124-AT was heard around 0757z through to 1130z with a large number of Europeans in hot pursuit. Amsterdam Island is to the North East of Kerguelen Island in the Southern Indian Ocean.

Usual signals from South Africa are still about although they have dropped off quite a bit in signal strength lately, numerous 44-AT calls have been noted from 0330z onwards. I have been keeping an eye on this region as from time to time the odd DXpedition is launched into Lesotho and Swaziland from South Africa, usually by Andre (44-AT-120) who signs as 142-AT-120 and 191-AT-120 respectively — cards go to Andre's home A/D.

MIDDLE EAST & ARABIA

A bit of a mixed bag from this region has been noticed on the band, the usual regulars are about, especially from Lebanon, with plenty of Alpha Tango and Papa Whiskey members to choose from. Lebanon has been noted from 0445z onwards until the band closes.

Some good signals from Turkey have been logged starting with Deniz, who signs as TU-002, using only a groundplane antenna with 12 watts of power. Deniz was a good five and four to five and seven here around 1055z — he operates from Merter, a suburb of Instanbul, the capital of Turkey. Also I heard some activity from Ercu, who signs as 116-AT-107 from Istanbul, at 0845z but the signal was down.

Saudi Arabia is about, but, it seems to be a battle to get any response from there although Western Australia and Indonesia seem to do OK. I have heard a couple of 48-AT members around 1150z onwards but they are usually snapped up by Scandinavia fairly quickly.

I heard one station in Finland secure Saudi Arabia but found it difficult to work him as hordes of Italian and United Kingdom stations were also trying to get a contact — after he had subdued his European neighbours the Saudi Arabian had left the frequency.

Well known Guam Island operator, Danny, 62-AT-101 or 68-W-78 has many DX countries to his credit — he uses a Uniden Grant and a Cobra 2000 GTL through a two element PDL-2 quad at a height of 15 metres.

I have heard two new stations operating out of Qatar recently and this should provide Saad, who signs as 115-AT-102, a little relief as for some time he was the only operator out of Qatar.

EUROPE

Russia has been more noticeable on the band recently with Boris, who signs as 50-AT-380, putting a hefty signal into Australia around 1220z — Boris is in the Crimea area of the USSR. The UB-01, operated by Grey, is still a good strong signal although no one seems to have received the QSL cards he promised to send to his Australian contacts.

Weak signals from Poland are still around and also heard at 1355z was a station signing as 'Radio Czechoslovakia' with a signal of five and six on peaks. His poor command of English made it very difficult to move him off the call frequency but hopefully this is a sign that conditions to Eastern Europe are improving.

Some poor signals have been heard from the Faroe Islands, but, these are very quickly snapped up by other European stations — the Faroe Islands are located roughly half way between Scotland and Iceland.

East Greenland was heard calling at 1130z with a signal of five and three — the station was signing as '265' and quickly faded out.

Iceland has been noted many times but they are hard to secure as their signals are down and noise from southern Europe makes it difficult. Some of the stations I heard were Alpha Tango members and that was around 1130z through to the close of the band.

The United Kingdom has been quite regular in its appearances with good signals from most districts — one strong station noted was George who signs as 26-AT-605 — he was ten over nine at 1040z and holding quite well.

An excellent signal from the Republic of Ireland comes from James who signs as KP-897 — James is not too far from Dublin and was a solid five and nine at 1106z.

Quite a few strong signals have been coming from Yugoslavia with most of the regular stations being heard from 0830z through to the close of the band.

Greece and Cyprus have been quite strong at times also, Tolis, who signs as 59-AT-101 out of Rhodes Island, was active working hordes of Indonesian and Philippine operators, also noted was Chris, who signs as 110-AT-120 out of Cyprus, working into Tasmania and South Australia at 0945z.

There has been some activity out of Malta recently with two stations being noted here, one was a 93-AT and the other an Italian speaking operator who I could not identify as my Italian is very poor, both were noted around 0830z working other stations in Europe.

All of the regular DX out of Scandinavia and Western Europe has been around as normal but signals are very unpredictable from one day to the next. The bands opens to the regulars, Italy, France, Belgium, West German, etc. anytime from 0400z onwards. I think most serious DXers will be after other countries than these. For those who still need Sardinia, there have been a few signals noted from there, most are 165-AT stations.

CENTRAL/SOUTH AMERICA & THE CARIBBEAN SEA

There have been some excellent longpath openings to these areas at night, from around 1000z onwards these countries have been coming in with Europe on the same beam headings — an interesting one to note was 120-AT-101 operating from Antigua in the Caribbean — he was heard at 1230z on the longpath with a good strength five on the meter.

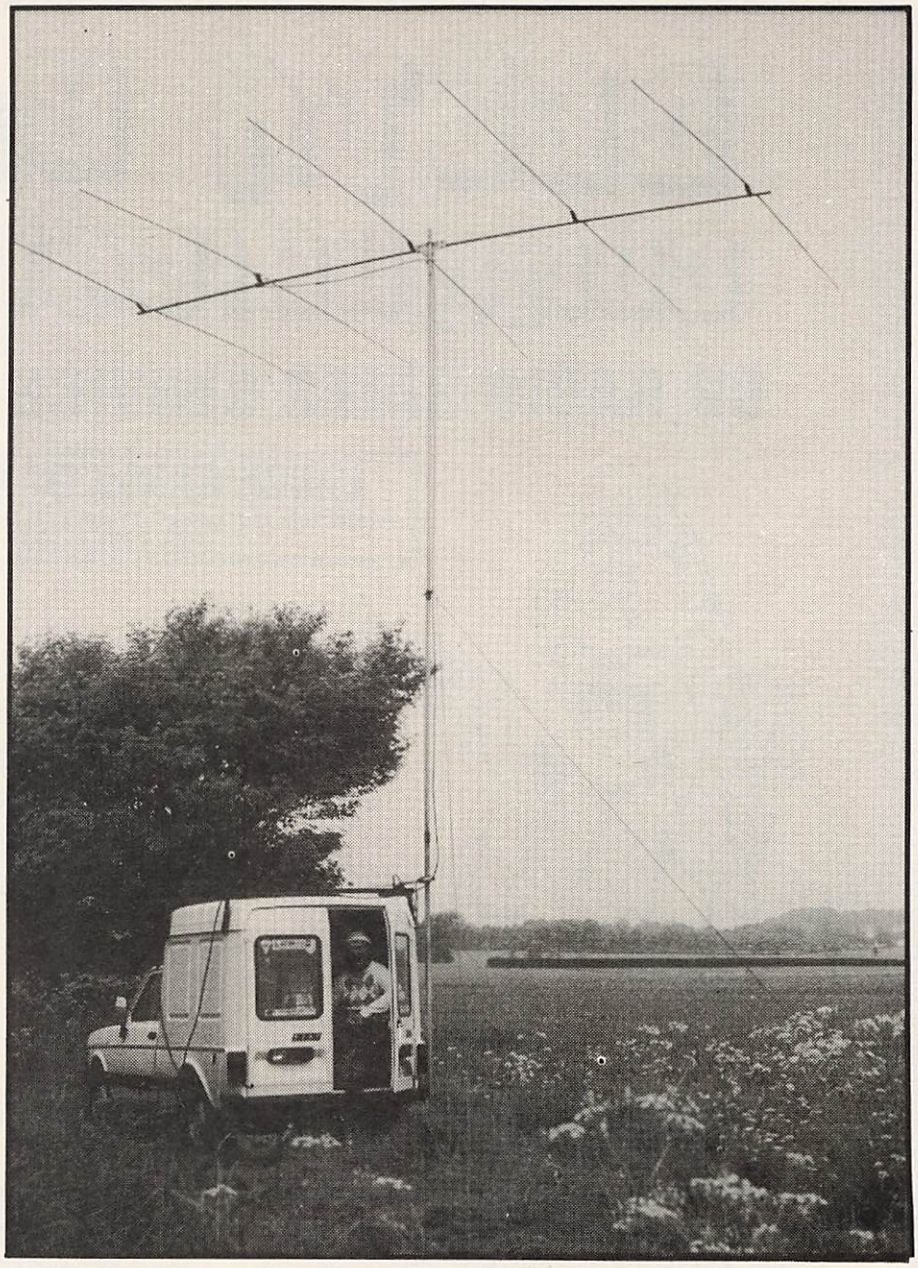
Galapagos Islands was also heard around 0800z on the shortpath with a station signing as 145-AT-101 noted calling Europe and the Middle East — the Galapagos Islands are in the Pacific Ocean west of Equador and are much needed by most DXers.

Argentina has been quiet on the shortpath but not so on the longpath and I logged 4-AT-108 operated by Ines at 1130z with a reasonable signal. Uraguay and Brazil were noted also via longpath through to 1345z.

Costa Rica and other regulars from the northern parts of South America have been heard on the shortpath during daylight hours but the signals have declined in the past few weeks.

The Flying Eagle DX Club out of Aruba is holding a DX contest which starts at 0000z on the 1st March 1989 and concludes on 31st of March at 2400z. It is open to all Flying Eagle members around the world and the club is offering a trophy for first and second prize and a diploma for third prize.

The odd signal from Hamilton, Bermuda has been coming in via the longpath at night and activity from this much needed country should provide us with another bite at the cake and perhaps delete another country from the wanted list.



Cedric, the 26-AT-435 is a DX and DXpedition fanatic from South Yorkshire — he takes to the hills in his mobile (complete with five element Yagi) even though the hills in this case are only 175 metres above sea level!

(continued over)

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7. The cost of the certificate is $3 if collected personally, or $5 if posted.
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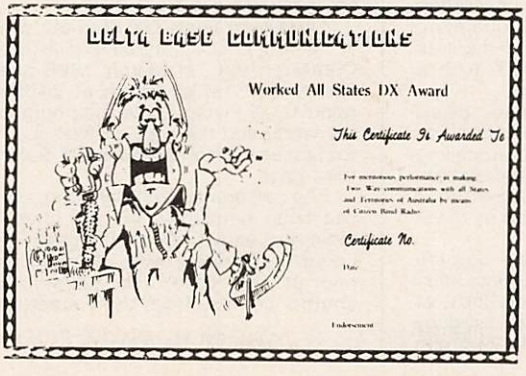

So 27 meggers, resurrect that old beam, blow the spiders out of the rotator and get stuck into it.

Address all applications for the Award to: **Delta Base Communications 889 High Street, THORNBURY, Vic. 3071**

GOOD LUCK!

Well known West German operator Joachim Schmolke, the 13-AT-419, is currently back-packing around Australia catching up on old contacts.

DX INTERNATIONAL
(continued)

ASIA & THE PACIFIC REGION

Some much welcomed DX by way of a couple of new countries has seen a surge of activity directed mostly to Asia. Quite a few Australians would have by now been fortunate enough to work Darrel, who signs as 86-AT-101. Darrel is a Canadian from Calgary and has set up a station 180 kilometers South West of Kathmandu in Nepal (which is part of the Himalayas) and has spent most of his spare time on the bands giving DXers a chance to work this much needed one on 11 metres.

QSL from 'Lucien' of Belgium who is running a Yaesu FT101 into a four element Yagi beam.

Even though his signal is not real strong at times, he has been very courteous in giving this country to many Australian DXers despite severe QRM problems at his end. Darrel usually comes on for two hours at a time and finds that 1200z through to 1400z are the best operating times as the QRM is very bad in this region.

Mongolia has also been about the band with a station signing as VED-25 being heard around 0700z onwards — he is very hard to get hold of as many other stations are also after this one, but, with a little patience and the right conditions you may be lucky to also wipe this one off the DXCC list.

Thailand has made an appearance on 11 metres by way of Samhosm who signs as GV-17 — Samhosm only runs 10 watts into a vertical antenna so do not expect a big signal from him — but he is very keen to work Australia.

Quite a bit of activity has been heard from Okinawa, by way of Tom who signs as PIG-02. Tom is quite annoyed with Australian DXers as he has gone to the trouble of sending 22 QSL cards down and to date has only received one card back, a pretty poor response from Australia considering Australians are the first to whinge when cards do not arrive here. Have a look through your logs and see if you owe him a card as he may be waiting for yours.

Just before I close I would like to mention that popular West German DXer Joachim Schmolke who signs as 13-AT-49 in his native city of Hamburg is currently back-packing around Australia for six months. He has made many friends DXing to Australia and is keen to meet up with his many contacts whilst in the country.

Well that is all for this edition and I would like to thank the following people for their contributions; ***Norm the 149, Phil the 43-AT-103, Stan the Unit 80, Wayne the 43-WT-09 and John the WO-234 in South Australia. Good DX and 73's Jack.***

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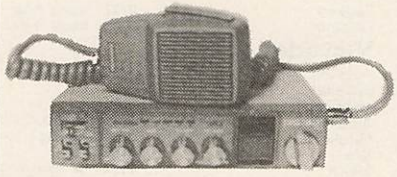

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Corowa	1/31	Corowa	Corowa Electronics
Tamworth	1/31	Windworth	Landlink Communications
Harden	1/31	Mt Bobbara	—
Wagga	1/31		Riverina Communications —
Wilcannia	1/31	Murtee Station	—
Inverell	2/32	Inverell	—
Sydney	2/32		Argent Communications —
Canberra	2/32	Isaacs Ridge	Philips Communications
Parkes	2/32	Parkes	Bionics Australia
Narrabri	2/32	Castletop Mountain	Lance Hannaford Elect.
Walbundrie	2/32	Walbundrie	Corowa Electronics
Lismore	2/32	Raus	—
Murrundi	3/33	Liverpool Range	—
Sydney	3/33	Prospect	Philips Communications
Tenterfield	3/33	Mt McKenzie	Nathan Ross Electronics
Taree	3/33	Taree	—
Deniliquin	3/33	Deniliquin	Deniliquin Machinery
Tumbarumba	3/33	Mt Ikes	—
Armidale	4/34	Armidale	New England Mobile Comm's
Hay	4/34		Phil Shields Electronics —
Broken Hill	4/34		Broken Hill UHF Club —
Cooma	4/34		Blamac Communications —
Sydney Outer-west	4/34		Riverlands Rpt Group —
Goulburn	4/34	Mt Gray	Double Diamond
Albury	4/34	Lavington	Albury Communications
Muswellbrook	4/34	Mt Arthur	General Communications
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Newcastle	6/36	New Lambton	General Communications
Coffs Harbour	6/36	Coffs Harbour	Country-wide Communications
Moree	6/36	Terry Hi-hi	Des Groth Radio-Electronics
Cowra	7/37	Bellview Hill	Harvey Electronic Service
Sydney	7/37	Chatswood	Philips Communications
Brendalilla Ranges	7/37		Outward Bound Aust. —
Broken Hill	7/37		Broken Hill UHF Club —
Bulahdelah	7/37	Cabbage Tree Mt	Great Lakes UHF Rpt Group
Wagga	7/37	Wagga	Riverina Communications
Glen Innes	7/37	Mt Rumbee	Glen Innes Amatuer Radio Club
Bathurst	8/38	Mt Panorama	Serv-U Appliance Centre
Stanthorpe	8/38	Amiemn	—
Sydney outer-west	8/38	Kurmond	Riverlands Rpt Group
Wollongong	8/38	Robertson	Phil Day
Walcha	8/38	Walcha	WALGRAZ—
Portable NSW			VariousNDP-826, GT Electrics
ACT			
Canberra	2/32	Isaacs Ridge	Philips-TMC
Canberra	8/38	Isaacs Ridge	Philips-TMC
Victoria			
Penshurst	1/31	Mt Rouse	Hamilton UHF Users Grp
Bairnsdale	1/31		Gippsland Rpt Assoc. —
Melbourne	1/31		Omega Radio Club —
Alexandra	1/31	Mt Eildon	Weeks Radio
Mansfield	2/32	The Paps	—
Moe	2/32	Moe	Gippsland Rpt Assoc.
Ballarat	2/32	Mt Buninyong	Central Highlands Rpt Assoc.
Lorne	3/33	Weeaproinah	—
Melbourne	3/33	Lysterfield	Philips Communications
Melbourne	3/33		W.I.A. (VIC Division) —
Mildura	3/33		Ferguson Security & Sound —
Yelta	3/33	Yelta	Nor-Co Sales & Service
Strathbogie Rngs	3/33	Mt Wombat	Goulburn-Murray Rpt Group
Bendigo	4/34	Specimen Hill	Central Vic. Rpt Assoc.
Geelong	4/34		Geelong Amateur Radio Club —
Carrajung	4/34	Carrajung	Carrajung UHF CB Rpt Assoc.
Hawkesdale	4/34	Hawkesdale	—
Hamilton	5/35	Mt Bainbridge	Hamilton Electronics
Melbourne	5/35	Olinda	Paravic Sports Assoc.
Foster	6/36	Mt Fatique	Gippsland Rpt Assoc.
Ararat	6/36	Mt William	Mt William UHF Rpt Committee
Wangaratta	6/36	Warby Ranges	Corowa Electronics
Gippsland	7/37	Mt Taylor	Gippsland Rpt Assoc.
Shepparton	7/37	Shepparton	Angus Communications
Ballarat	7/37		Ballarat Communications —
Melbourne	7/37	Frankston	Powerband Communications
Myrtleford	8/38		The Alpine Rpt Group —
Cavendish	8/38	Mt Dundas	Hamilton UHF Users Grp
Bendigo	8/38	Mt Alexander	—
Portable Vic.	Various	State-wide	Omega Radio Club
Queensland			
Bundaberg	1/31	Mt Perry	Bundaberg HI-Fi Stereo
Mt Isa	1/31	Lake Julius	Qld Education Dept.
Brisbane	1/31	Mt Cotton	Philips Communications
Rockhampton	1/31	Mt Archer	Capricornia UHF Rpt Assoc.
Atherton-Mareeba	1/31	Rocky Creek	Marteens Electrtonics
Mt Stewart	1/31	Mt Stewart	Olbis Industries
Roma	1/31		Roma Teleradio —
Middlemount	1/31		Middlemount S.E.S. —
Leichhardt	1/31	Mt Hope	Driscoll Pastoral
Clermont	1/31	Clermont	—
Gunalda	2/32	Mt Kanigan	Ralph Hill Electrical
Taroom	2/32	Mt Kinnoul	Taroom Rpt Assoc.
Toowoomba	2/32	Picnic Point	Custom Scientific Electronic
Marlborough	2/32	Broadsound Range	Marlborough UHF Rpt Assoc.
Quilpie	2/32	Trinidad Station	D.E.A. Pegler & Co.
Ingham	2/32	Mt Cudmore	R.E. Pugh
Mackay	3/33	Farleigh	Mackay Citizens' Rpt Group
Monto	3/33	Pine Mountain	Monto UHF Rpt Committee
Tin Can Bay	3/33	Double Island Point	Tin Can Bay Lions Club
Springsure	3/33	Rodda Lookout	Bauhina S.E.S.
Cairns	3/33	Mt Yarrabah	GCG Communications
Bajool	4/34	Mt Hopeful	Mt Hopeful UHF Rpt Assoc.
Dalby	4/34	Mt Mowbullan	G.T. Communications
Ipswich	4/34		Ipswich Repeater Org. —
Bundaberg	4/34	The Sloping Hummock	Bundaberg Hi-Fi Stereo
Goondiwindi	4/34	Goondiwindi	Border TV & Radio
Gold Coast	4/34	Coolangatta	Philips Communications
Brisbane	5/35	Mt Glorious	ACRM (Qld)
Caloundra	6/36	Bald Knob	Ralph Hill Electrical
Gladstone	6/36	Mt Larcom	Nixon Controls
Palm Island	6/36	Palm Island	Palm Island Council
Blackdown	6/36	Blackdown Tableland	Blackdown UHF Rpt Assoc.
Burnett Ranges	6/36	Mundubbera	Custom Scientific Electrical
Yaraka	7/37	Mt Slowcombe	Yaraka Rpt Assoc.
Brisbane	7/37	Toohey Mountain	Olbis Industries
Clermont	7/37		Clermont S.E.S. —
Murgon	7/37	Mt England	Murgon Rpt Assoc.
Mt Alexandra	8/38	Mt Alexandra	Bill Jones Comms
Biloela	7/37	Mt Bertha	Biloela Rpt Assoc.
Stanthorpe	8/38	Amiens	Mt Peanga Rpt Assoc.
Chinchilla	3/33	Mt Peanga	Mt Peanga Rpt Assoc.
Emerald	8/38	Emerald	Emerald District Rpt Asc.
Pialba	8/38	Ghost Hill	Maryborough Sugar Factory
Milaa Milaa	8/38	Milaa Milaa	Bill Jones Comms
South Australia/ Northern Territory			
South Australia/ Northern Territory			
Adelaide	1/31	Summerton	Philips Communications
Carrieton	1/31	Price Hill	—
Darwin	1/31	Darwin	Seascan Communications
Black Rock Peak	2/32	Black Rock Peak	Tocps Electrical
Cleve	2/32	Mt Nield	Cleve Rpt Assoc.
Myponga	2/32	Myponga Hill	Volunteer Coast Guard
Adelaide	3/33	Trott Park	Philips Communications
Blinman	3/33	Patawarta Hill	—
Barossa Valley	4/34		Barossa District Rpt Grp. —
Kangaroo Island	4/34	Parndana	Kangaroo Island Rpt Assoc.
Snowtown	4/34	Snowtown	—
Naracoorte	4/34	Lucindale	Naracoorte UHF Rpt Assoc.
Adelaide	5/35	Hawthendorne	ACRM (SA)
Renmark	6/36	Renmark	—
Whyalla	6/36	The Bluff	Mt Remarkable Council
Clare	7/37	Quarry Hill	Mid-North Rpt Assoc.
Mt Gambier	7/37	The Bluff	South-east UHF Rpt Assoc.
Mt Bryan	8/38	Mt Bryan	Mt Bryan Rpt Assoc.
Port Lincoln	8/38	Tumby Bay	Sth Eyre Peninsula Rpt Assoc.
Portable SA	Various	State-wide	ACRM (SA)
West Australia			
Denmark	1/31	Denmark	—
Kellerberrin	1/31	Kellerberrin	Central Wheatbelt Rpt Group
Kambalda	1/31	Kambalda	Goldfields Rpt Assoc.
Meekatharra	1/31	Hill View Station	—
Perth	1/31	Wanneroo	Philips Communications
Wickham	1/31	Wickham	Wickham Radio Club
Bencubin	2/32	Bencubbin	—
Bunbury	2/32	Shenton Ridge	Greyhound TV Sales
Albany	3/33	Mt Melville	—
Perth	3/33	Roleystone	Philips Communications
Boyup Brook	4/34	Dinninup	Boyup Brook Farm Comm's Group
Esperance	4/34	Esperance	—
Kulin	4/34	Kulin	—
Lancelin	4/34	Lake Karakin	Gingin Shire Council
Perth	5/35	Maddington	CREST (WA)
Margaret River	6/36	Ellen Brook	Margaret River UHF Repeater Group
Mt Marypeaks	6/36	Mt Marypeaks	
Wyalkatchem	6/36	Wyalkatchem	D. & G. Pearce
Mt Barker	7/37	Mt Barker	Plantagenet Rpt Group
York	7/37	Mt Bakewell	York Rpt Group
Coolgardie	7/37	Mt Burgess	—
Manjimup	8/38		Manjimup Comm Radio Service— —
Ravensthorpe	8/38	—	—
Portable WA	8/38	WA-wide	Gary, WAX-723
Tasmania			
Devonport	1/31	Roland	Rick Rickard, TAJ-652
Hobart	1/31	Grass Tree Hill	Southern Tas. Rpt Assoc.
Launceston	2/32	Mt Arthur	Launceston Rpt Assoc.
Devenport	3/33	Railton	Rick Rickard, TAJ-652
North-East Coast	3/33	Tower Hill	North-East Rpt Assoc.
Tasmanian Midlands	4/34	Millers Bluff	Midlands Rpt Group
Hobart	5/35	Mt Faulkner	CREST (Tas.)
East Coast	6/36	Mt Toombs	East Coast Rpt Assoc.
West Coast	6/36	St Valentines Peak	North-West Coast Rpt Assoc.
Central Highlands	7/37	Barren Tier	Central Highlands Assoc.
Burnie	8/38	Round Hill	North-West Coast Rpt Assoc.
Hobart	8/38	Mt Nelson	Harts Pty Ltd
Portable Tas	Various	Tasmania-wide	Rick Rickard, TAJ-652

Can you find the radar in this picture? Cobra can.

By the time you see the radar source, chances are it's too late. But if you had a Cobra Trapshooter radar detector, it would sniff it out in an instant.

Cobra Trapshooter's not only find radar wherever it lurks, but also filter out false signals that other detectors simply can't.

Both the miniaturised yet incredibly sensitive Cobra Trapshooter Ultra, and the Cobra Trapshooter employ the latest technology in electronic circuitry to warn you of radar, even over hills and around the bend.

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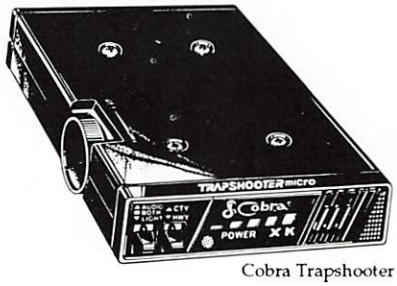
The Trapshooter Ultra is even smaller, with its unique, sporty design, and 3 different alarm settings: voice warning, melody and beep.

Oh, the radar? Take a good look. It's just beyond the bend, behind the row of trees on the right.

Still can't see it? Better get a Cobra.

Cobra Trapshooter Ultra RD 3170



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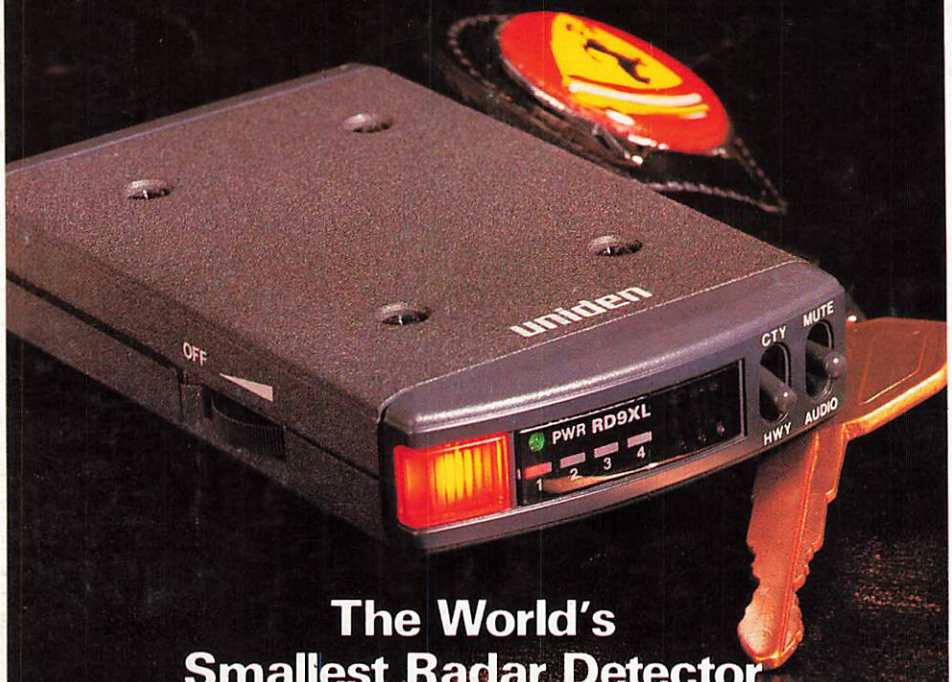

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